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# **EXECUTIVE ORDER**

## **Creating the Great Salt Lake Advisory Council**

**Whereas**, the Great Salt Lake provides unique and critically important habitat for millions of migrating birds and other wildlife;

**Whereas**, the Great Salt Lake provides significant mineral resources vital to the economic well-being of our state as well as providing for the employment of thousands of Utahns;

**Whereas**, the Great Salt Lake hosts numerous recreational activities such as birding, hunting, sailing, camping, hiking, and unparalleled opportunities for solitude;

**Whereas**, the population surrounding and dependent upon the Great Salt Lake will continue to increase in upcoming years,

**Whereas**, the State of Utah seeks to make certain that the future of the Great Salt Lake is planned for in a way that preserves the fragile ecosystem of the Great Salt Lake while ensuring that important resources can continue to be utilized from the lake and that recreational opportunities for Utahns be preserved and enhanced;

**NOW, THEREFORE**, I, Jon M. Huntsman, Jr., Governor of the State of Utah, by virtue of the authority vested in me by the Constitution and laws of the State of Utah do hereby order the following:

1. There is created the Great Salt Lake Advisory Council:
  - a. Consisting of members who are appointed by and serve at the pleasure of the Governor;
  - b. The Utah Department of Natural Resources and the Utah Department of Environmental Quality will provide staff and budgetary support;
  - c. The Office of State Planning Coordinator will provide staff and budgetary support and facilitate the cooperation of all state and federal entities on behalf of this Council;
  - d. The Council may seek expert assistance through recruitment of a Volunteer technical advisory committee;
  - e. The Council may seek expert assistance for facilitation and guidance on management of other great water bodies through state agency contracts where funds are available;
  - f. The Council may conduct hearings in counties adjacent to the Great Salt Lake as deemed appropriate.
2. The Council shall:
  - a. Develop a vision for the future of the Great Salt Lake;

- b. Review the role of the State of Utah with regard to the management and protection of the Great Salt Lake;
  - c. Review shared and independent responsibilities of state and federal governmental agencies, public interests, uses and pressures on the natural resource;
  - d. Consider management structures used for other internationally significant water bodies such as the Chesapeake Bay, Great Lakes, and Puget Sound;
  - e. Make policy recommendations concerning the long-term viability of the entire Great Salt Lake ecosystem while taking into account the need to balance ecological, economic, recreational, private property and other concerns regarding the Great Salt Lake ecosystem in its entirety;
  - f. Develop a framework for the establishment of a permanent legal entity [e.g. Great Salt Lake Commission] using an interlocal cooperation agreement or other legal joint agreement that can:
    - i. facilitate orderly planning and development around the lake,
    - ii. promote beneficial use and protection of the natural resources of the lake,
    - iii. foster communication and coordination of the various agencies and entities with management, regulatory, or other legal responsibilities or authorities in and around the lake,
    - iv. promote the conservation and protection of the lake's resources,
    - v. monitor and promote responsible economic activity around the lake;
  - g. Recommend a membership for any permanent entity;
  - h. Recommend how a permanent entity might be staffed and funded;
3. Members of the Great Salt Lake Advisory Council serve without compensation. However, Council members may be allowed meeting per diem and travel reimbursements. All such reimbursements must be approved by the Executive Director of the Department of Natural Resources, and must be funded from the Department's existing budget.
4. Under current Utah law, the Council will not have subpoena power of similar or investigative authority.

Great Salt Lake Advisory Council Meeting - 12/09/2008  
Facilitated by Bill Ross of Bill Ross and Associates

Outcome of 12/09/2008 Meeting:

- Identified threats facing Great Salt Lake: water supply/quantity, pollutants, population growth (development and water demand) , public interest/perception, eutrophication, upstream effects, lack of funding for research, lack of understanding of healthy lake, no coordinated agency effort - each working within a silo
- Agreed that an overarching Great Salt Lake Commission is needed
- Created the vision for a future Great Salt Lake Commission: Define a healthy Great Salt Lake (primary factors contributing to lake health, create baseline and key indicators, prioritize issues, and establish communication and public participation processes).
- Established four subcommittees to advance the work of the council between meetings: Mission Statement, Governance Structure and Funding, Science, and Communication and Marketing.
- Established a timeline for the Council's next steps:
  - Determine the role, authority, structure and representation by March, 2009
  - Produce a final report with recommendations to the Governor by April, 2009

Great Salt Lake Advisory Council 2009 Meetings:

\*Please designate alternates in case of absence (alternates must be established by 12/30/08)

DATE	TIME	LOCATION	PURPOSE/GOALS
January 14, 2009	1:00 PM to 2:00 PM Casual discussion with panel, box lunch included  2:00 PM to 5:00 PM Meeting	DEQ Room 201	Governance structures – Presentations and Interactive Panel by Robert Adler, Jim Kramer, Utah Lake Commission and Bear Lake Commission
February 19, 2009	1:00 PM to 5:00 PM (includes box lunch)	DEQ Room 101	Funding mechanisms
March 18, 2009	9:00 AM to 5:00 PM (includes catered lunch)	DEQ Room 201	Draft recommendations
April 22, 2009	1:00 PM to 5:00 PM (includes box lunch)	DEQ Room 101	Review final report

- Schedule public forums post April
- Present to 2009 Interim Committees

Subcommittees:

- Subcommittees will interact through e-mail, phone or in person

- All council meetings and subcommittee meetings will be posted on the Google Calendar <http://www.google.com/calendar/render> (sign in: jgardberg@utah.gov, password: gslaccouncil) Council Members can post to this calendar or have Jodi Gardberg post to the calendar.
- The subcommittees will provide an outline to be circulated amongst the council at a minimum of 2 weeks (March 4) prior to the March 18, 2009 Meeting.

Subcommittee Appointments:

TOPIC	WHOM	STAFF SUPPORT	OBJECTIVES
Governance Structure and Funding	Don Leonard, Leland Myers, Corey Milne, Ben Ferry	Bill Ross	Research potential governance models and funding options
Communication/ Marketing	Neka Roundy, Bill Fennimore, Wilf Sommerkorn, Colleen Johnson	Jodi Gardberg	Develop plan for engaging the broadest possible stakeholder groups to get feedback on the GSLAC recommendations and legislative support
Science	Bonnie Baxter, David Livermore	Jim Kramer, Dave Grierson	Develop a comprehensive list of past, current and future research objectives for the GSL and a model for future collaboration.
Mission Statement	Leland Myers, Lynn de Freitas	Leah Ann Lamb	Establish a mission statement for a future GSL Commission.

2670 N. 750 E.

North Ogden, UT 84414

December 22, 2008

Resource Development Coordinating Committee

5110 State Office Building

Salt Lake City, UT 84114

Dave Grierson

Sovereign Lands Coordinator

Division of Forestry, Fire & State Lands

1594 West North Temple, Suite 3520

Salt Lake City, UT 84116-3154

Dear Sirs,

The following comments are in regard to the proposed Mineral Lease Expansion near Dolphin Island. I wish to express my point of view from the experience I gained as Refuge Manager of Bear River Migratory Bird Refuge from 1989-2006. During this period of time I was able to make observations of migratory bird use in Bear River Bay under a wide range of Great Salt Lake elevations and environmental conditions.

First and foremost, it must be recognized that Bear River Bay and Bear River Migratory Bird Refuge function as an ecologic whole. The health of each component affects the other. In addition, the Harold Crane Waterfowl Management Area as well as the Willard Spur portion of the Bay add yet another dimension of wetland habitat diversity to the area. The Bear River Bay ecosystem functions as a unique wetland habitat area for a wide variety of migratory birds. Because it provides the greatest freshwater supply to Great Salt Lake, it sustains profuse growths of aquatic food plants as well as fish life, providing an abundant source of food for migratory birds throughout the seasons.

Bird use of Bear River Bay is extremely high and under some conditions, it may support more birds than Bear River Refuge itself. The Bay is also an important area for colonial nesting birds such as ibis and grebes. The area is mix of open water, mudflats, emergent marshes and submergent marshes. It also contains an element of safety in open space and solitude for birds to rest and replenish their energies for long migrations.

Bear River Bay is also used extensively by the public for hunting waterfowl. The hunting quality, in terms of both bird harvest and overall outdoor experience, is recognized as among the highest in the Western United States. I am also aware of outdoor photographers and avid birdwatchers frequenting the area.

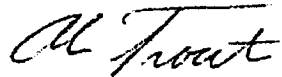
I have also personally observed the negative impact that evaporation ponds have on bird use and hunting. Bird use of the already constructed evaporation ponds is dramatically less than the

undeveloped portion of the Bay. Likewise, hunting is essentially eliminated on the evaporation ponds as well.

I strongly oppose any new evaporation pond development in Bear River Bay. The proposed doubling of Gunnison Bay ponds and the subsequent increase in brine will likely drive the need to expand the ponds in the Bear River Bay area. If this is the case, I am also opposed to the expansion of Gunnison Bay ponds.

This project as proposed does not adequately address the extreme impact it will make on migratory birds and their habitat both in Gunnison and Bear River Bay. The secondary affects on Bear River Migratory Bird Refuge are also substantial.

Sincerely,

A handwritten signature in cursive script that reads "Al Trout".

Al Trout

Retired Manager, Bear River Migratory Bird  
Refuge

December 18, 2008

Members of the Resource Development  
Coordinating Committee  
5110 State Office Building  
Salt Lake City, Utah 84114

Michael R. Styler  
Executive Director  
Department of Natural Resources  
1594 West North Temple, Suite 3710  
Salt Lake City, Utah 84114-5610

Richard J. Buehler  
Director and State Forester  
Dave Grierson  
Sovereign Lands Coordinator  
Division of Forestry, Fire & State Lands  
1594 West North Temple, Suite 3520  
Salt Lake City, Utah 84116-3154

Re: Comments on the Proposed Mineral Leases Near Dolphin Island, Great Salt Lake

Dear RDCC Members, Mr Styler, Mr. Buehler and Mr. Grierson:

The Utah Airboat Association has a 40 year history of boating in the Bear River Bay and on the south side of the GSL Minerals facility in Ogden. We spend many thousands of man-hours in the area on and around the leases held by GSL Minerals. By allowing the GSL Mineral Company to relinquish old leases and greatly expand their production on the west side of the lake, we believe it will ultimately cause the company to dike in the 8000 acres they hold leases on in Bear River Bay. This will greatly impact our boating/hunting opportunity, it will greatly decrease the number of birds that are able to utilize the area and it will cause alterations in the hydrology of the Willard Spur area. These cause and effect issues are of grave concern to our organization and we urge you to reject approving the proposed mineral lease of 37,083 acres of sovereign lands near Dolphin Island, Great Salt Lake until GSL Minerals can answer important questions about their intentions concerning the Bear River Bay parcel.

We also believe that it is premature to allow land-use changes on the Great Salt Lake until the Governor's Great Salt Lake Advisory Council has had time to make recommendations concerning future management decisions for Great Salt Lake that would include mineral extraction activities. This appears to be a subversion of the lease



process, and even if it proves to be legal, it certainly violates the spirit of cooperation and public trust that the State Lands Division is required to provide.

Please take our recreational interests into consideration before allowing any more diking of the Great Salt Lake shoreline.

Sincerely,

/s/

R. Jefre Hicks  
Utah Airboat Association  
801-475-6155  
6680 South 475 East  
South Weber, UT 84405

December 19, 2008

Members of the Resource Development  
Coordinating Committee  
5110 State Office Building  
Salt Lake City, Utah 84114

Dave Grierson  
Sovereign Lands Coordinator  
Division of Forestry, Fire & State Lands  
1594 West North Temple, Suite 3520  
Salt Lake City, Utah 84116-3154

*Re: Mineral Lease Expansion Near Dolphin Island*

Dear Committee Members and Mr. Grierson,

The Utah Waterfowl Association ("UWA") is a non-profit organization that was created for the preservation of waterfowl habitat in Utah and the waterfowling heritage these fragile ecosystems have long sustained.

We have reviewed Great Salt Lake Minerals proposal to transfer/expand its leases in the Great Salt Lake and are adamantly opposed. The proposed transfer betrays the public trust, disserves the public at large and would be a huge net loss to wildlife.

The sole purpose of the transfer appears to be to justify the need for further expansion at the long and short term cost to the lake and the wildlife that it supports. This expansion will have a tremendous negative impact to Utah waterfowl hunters. In addition to the comments submitted below, the UWA supports and incorporates herein the more extensive and detailed comments of the Audubon Society and FRIENDS of Great Salt Lake.

The proposed transfer/lease expansion has apparently been given only

cursory scrutiny by the agency tasked with managing Great Salt Lake sovereign lands and acting consistent with the public trust doctrine and statutory constraints. The continued segmentation and piecemeal destruction of the lake is inconsistent with both. Dramatic expansion of diking in the North Arm of the lake would only require increased impoundments in Bear River Bay, all at a huge loss in avian habitat and public use. Moreover, this segmentation permanently reduces the viability of the lake ecosystem as a whole. The artificial shrinking of the lake only enhances its vulnerability and leaves its continued habitat more prone to fluctuation and less capable of providing needed habitat and recreational opportunity at different lake levels.

For well over a century, waterfowlers have hunted on the lake and fed their families with the lake's bounty. They have advocated for protection and preservation of an irreplaceable resource. The proposed action disserves this proud heritage and replaces a vibrant, thriving natural wonder with a grim and lifeless industrial wasteland.

Best Regards,

/s/

John D. Ray

Vice President, Utah Waterfowl Association

December 24, 2008

Members of the Resource Development  
Coordinating Committee  
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Director and State Forester  
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Salt Lake City, Utah 84116-3154

Re: Comments on Proposed Mineral Lease of 37,083 Acres of  
Sovereign Lands Near Dolphin Island, Great Salt Lake.

Dear RDCC Members, Mr. Styler, Mr. Buehler and Mr. Grierson:

I would like to thank you for considering this input to the weighty decision that needs to be made concerning the public trust and intrinsic values of the Great Salt Lake ecosystem (or "GSL"), especially the importance of Gunnison Bay (or "North Arm") and Bear River Bay. Few places near or around GSL share the same quality of views and vistas, a commodity now absent in a vast number of North American landscapes, but my main concern is the need to protect and preserve these two bays as important aquatic bird habitats.

To help validate the following observations and data, it is important to state my background and experience with this aquatic system. I have worked on GSL and researched the birds associated with it for almost 40 years. I was employed with the Utah Division of Wildlife Resources ("DWR") from 1968 to 2002, and I am a member of the Intermountain West Joint Venture Shorebird Science Team and recently served as a member of the Waterbird Conservation Council of the Americas. I work as a biologist with the major salt lake water bird habitats in Western North America.

As part of my DWR responsibilities I had oversight of two of large islands of Great Salt Lake that are important to colonial birds. One such island is Gunnison Island in the North Arm, which is occupied by large numbers of breeding American White

Pelicans and California Gulls. I was responsible for the monitoring of these populations including the collection of 20 years of breeding pelican data and for habitat protection.

These comments will attempt to reflect the significance of the Gunnison Island complex in context of the North American range-wide American White Pelican conservation. In addition, I will emphasize the importance of the open water and shoreline portions of Gunnison Bay to several other hemispherically important aquatic bird species that occur at Great Salt Lake seasonally. Finally, I will discuss the importance of Bear River Bay, the primary foraging site for pelicans that nest on Gunnison Island and other pelicans in migration during the fall and spring.

During periods when GSL elevation occurs between 4193' and 4206' above sea level ("asl"), several aquatic bird species occur at GSL in continental and hemispheric numbers of importance, largely in Gilbert Bay. Populations of each species, including Wilson's Phalarope, Red-necked Phalarope, and the Eared Grebe may some years exceed 1,200,000 during their seasonal occurrence. These numbers of Wilson's Phalaropes and Eared Grebes represent up to 50% to 70% of the world's entire population of the birds.

During the infrequent periods when GSL elevation is over 4208' asl, Gunnison Bay becomes the primary foraging and resource area for these birds. During this period of high water, and thus mineral dilution of Gilbert Bay brines, brine shrimp and brine fly populations diminish as the lake ecology shifts from saline to freshwater, dropping out the important brine shrimp and brine fly food resource that these birds rely on. At this point of diminishing aquatic food resources in Gilbert Bay, the salinities in Gunnison Bay, by contrast, reach optimum condition for brine shrimp and brine fly production.

This shifting of primary foraging location was observed happening during the high-water lake years, from approximately 1983 to 1988. Migratory populations of Phalaropes and Eared Grebes were largely reliant upon Gunnison Bay for the food and energy reserves needed to complete their annual winter migrations, which sometimes exceeds 2,000 miles. Much of these species' foraging took place then, and will likely take place again in similar conditions, along the west shorelines of Promontory Point, around Gunnison Island, and west toward the Hogup Mountains, where Great Salt Lake Mineral Company ("Mining Company") proposes its industrial diking and ponding site expansion.

Thus, Mining Company's proposed expansion will severely impact and limit this necessary foraging habitat, such that during high lake levels, sensitive species including Phalaropes and Eared Grebes will be deprived of food and resources.

Furthermore, during a 1989-1991 range-wide Snowy Plover survey in the Western States, Utah was asked to provide information on numbers and breeding population locations for this species at GSL. Subsequently, Ph.D. graduate student Peter Paton and his graduate associates continued lake surveys for Snowy Plover into the mid-1990s. They located significant Snowy Plover populations within the shoreline complexes of Gunnison Bay. The largest concentration were in the northern portions of

the system, including Locomotive Springs WMA. Paton and his colleagues found other populations around fresh water seeps on the west shoreline of Gunnison Bay. (DWR NRO files, Paton 1995).

Both the National Shorebird Conservation Plan and the Intermountain West Shorebird Conservation Plan have ranked the Snowy Plover as a high priority species for conservation. The Intermountain West Plan lists it as one of the five highest priority species due to the West's important contribution to the conservation of the species in North America. The Pacific Coast population of Snowy Plovers is listed as threatened.

Mining Company's proposed north expansion of its solar evaporation ponds complex, along the west shoreline of Gunnison Bay, will adversely impact some historic nesting sites for the Snowy Plover. Furthermore, the increased development may harm or drive away breeding pairs that are using or will use the area during appropriate habitat conditions.

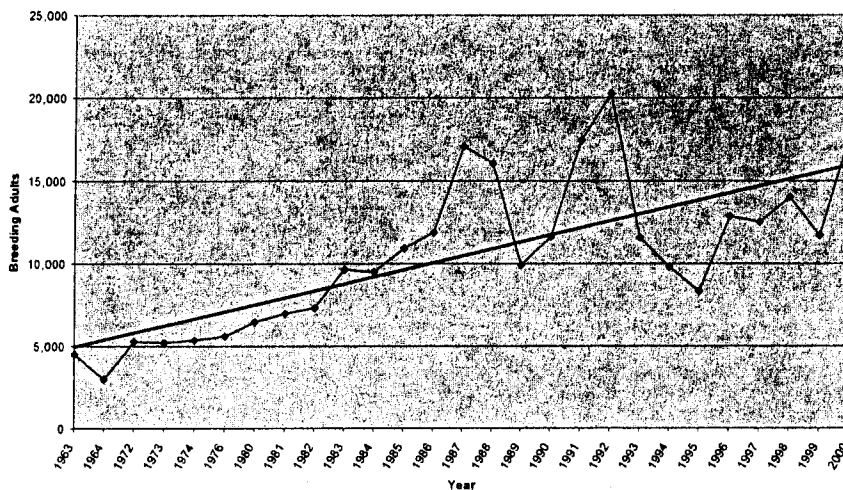
In addition, at least two historically active Golden Eagle nesting territories are sited near or associated with Mining Company's intended salt pond expansion. One, in the Fingerpoint-Hogup Ridge complex, had active Golden Eagle nesting at least until the early 1990s, although I have not checked them in some time. State agencies should consult with the United States Fish and Wildlife Service, especially regarding the status of these sites under the National Eagle Act and the Migratory Bird Treaty Act.

Gunnison Island itself has supported and currently supports significant populations of breeding American White Pelicans, California Gulls and at least one pair of Peregrine Falcons. This island has been a known active colonial bird nesting site since its reported discovery by Howard Stansbury in 1850. Since his historic Great Salt Lake survey, numerous observers have described continued use of Gunnison Island by nesting pelicans and gulls.

In 1979, a systematic breeding pelican survey was initiated. In over 20 years, records show some seasonal variation in pelican breeding numbers at Gunnison Island, but the trend line has demonstrated an overall increase in the number of breeding adults and subsequent nests.

During the last 60 to 70 years, many American White Pelican colonies in North America have been inventoried for numbers of breeding adults, nests and fledging young. The Gunnison Island population in Utah has consistently ranked among the top three largest American White Pelican colonies in North America. For example, available data for the year 1998 to 2001 for colonies in North America indicate that the population of Gunnison Island ranked number two. Chase Lake, North Dakota had the highest number of nests (14,900) and was the largest single breeding colony in North America. Chase Lake was followed in abundance by Gunnison Island, Utah with 8000 nests. (see Figure 1).

Figure 1. 1963-2000 Gunnison Island White Pelican Breeding Adult Population  
Plotted With Trendline



In 2003, more than 29,000 breeding pelicans nested at Chase Lake National Wildlife Refuge in Medina, North Dakota, hatching an estimated 14,500 chicks. Then, in June of 2004, over the course of a week and a half, the Chase Lake pelicans, the largest breeding colony of American White Pelicans in the world, abruptly and prematurely abandoned their nests, leaving eggs and chicks behind. An estimated 27,000-30,000 breeding birds fled. Not one chick survived. An aerial survey conducted in late May 2005 the next year, estimated 18,850 breeding adults had returned. This was back to the estimated breeding population of 1997, but still scientists have not been able to identify the reason for the June 2004 exodus. Terrestrial predation and disturbance is at the top of the list of suspected reasons.

In light of the sudden and unforeseen devastation of the Chase Lake pelican population, one of the most significant values of Gunnison Island is its secure location sequestered in the middle of Gunnison Bay, remote from human intrusion and terrestrial predation. It is most likely the most secure nesting site for American White Pelicans and California Gulls in western North America. However, escalating activity, including human activity associated with Mining Company's proposed industrial expansion in and around Gunnison Bay, would markedly diminish this crucial protective isolation and security. Human disturbance and activity are leading causes for permanent abandonment of pelican colonies in the world: Mining Company's proposed expansion could lead Gunnison Bay's pelicans to exactly the same fate suffered by pelicans at Chase Lake .

The Utah State Legislature, in cooperation with concerned members of the public, helped secure Gunnison Island and nearby Hat Island as wildlife preserves through a process of condemnation and acquisition in the 1970s. This investment by the people of the State of Utah, in good faith that these colonial nesting sites would be protected in perpetuity, is a significant contribution and commitment of public trust.

Likewise, DWR and its Wildlife Board have taken their stewardship of these colonies seriously over the years through establishing protection to the sites via the wildlife code. Biologists and wildlife managers have also invested time and resources toward the conservation and management of these important GSL bird habitats. Biologists have used significant caution when conducting research at the islands, so much so that in fact the population data is even collected through aerial photos to reduce on-the-ground disturbance. This extensive research and commitment of resources, together with the recognized vulnerabilities leading to the downfall of the Chase Lake pelican colony, should strengthen the state's resolve to protect the breeding colonies of birds occupying Gunnison Island.

Protection of nesting colonies is an essential key to long-term pelican conservation. The authors of the *American White Pelican Life History and Conservation*, Chapter 57, A Species Account of the Comprehensive Birds of North America, indicate that protection of breeding colonies from humans remains a primary management concern (Evans and Knopf 2004).

Gunnison Island is also home to a large colonial breeding population of California Gulls, our state bird. Over the 20 some years that pelicans have been surveyed by biologist at Gunnison, they have also estimated numbers of California Gull nests. Scientists estimate that the 9,000 -11,000 California Gull nests on this island, observed for over 20 years, constitute one of the largest and most stable breeding populations associated with GSL and in North America.

Historically, several other American White Pelican colonies existed in and around GSL and Utah Lake. These colonies have long since failed, due to human intrusion and activity. Once sites have failed, they have not been reoccupied, even though in some cases the old sites are currently more secure. Pelicans' failure to re-occupy these historic nest sites is reason for concern and increased vigilance for site conservation at Gunnison Island.

Allowing Mining Company to pursue additional development of GSL, in particular in the North Arm, will affect and continue to erode the security that Gunnison Island has enjoyed in excess of 150 years of known pelican and gull nesting activity. Proposed dike construction and maintenance will bring an added anthropogenic influence to the bay, including installing dikes miles closer to the island than one has ever before existed. These dikes would provide access for terrestrial predators to come closer to the island and a travel way to a land bridge to Gunnison Island during low lake periods. Furthermore, the proposed canal berms that would deliver water to expanded ponds provide additional cause for alarm. The configuration and direction of these berms appears to extend potential predator access eastward toward and close to Gunnison Island from the ponds.

In 1963, during a low lake event, a person could wade to the Gunnison Island from the west shore of GSL, according to DWR reports of human disturbance before the island was protected. This human intrusion into the colony killed many young pelicans. With Mining Company's proposed expansion in such close proximity to Gunnison



Island, a concentration pond dike may become a roost site for flightless fledgling pelicans exposing them to land predators. A dike also makes trespass easier for casual or intentional human trespassers, who could do (potentially inadvertent) harm to the birds or their habitat as well.

In addition to the severe risk of harm to Gunnison Island bird habitat, Mining company's proposed expansion intends to completely surround Dolphin Island, GSL's northernmost island, with an evaporative salt pond. In addition to having outstanding scenic and aesthetic values, the 60-acre Dolphin Island has been designated protected wildlife habitat. It is often connected to the mainland by a low bar extending 2.4 miles west across the lake. In the late 1930s, E.A. Goldman studied mammals of the GSL islands, identifying 9 new mammals. Later, Steven Durrant further studied these mammals and added to their description and distribution. During that period, Dolphin Island was the only island in GSL where two subspecies of kangaroo rats were found: a subspecies of Chisel-toothed kangaroo rat (*Diodomys microps russeolus*) and a subspecies of Ord kangaroo rat (*Diodomys ordii cineraceus*). Goldman considered all nine of the species he identified to be insular because they are associated with islands; Durrant found some of the nine species to occur on the nearby adjacent mainland, but that the two kangaroo rat subspecies from Dolphin Island did not frequent the mainland. To the best of my knowledge, the distribution of these two *Diodomys* species occurring on Dolphin Island has not yet been studied. It is worth noting that these species occur in a different habitat type on Gunnison Island itself than at the bar that separates them from the mainland by more than two miles. Such a condition might provide the isolation needed to keep the types pure and genetically distinct from one another. Further research is needed to determine whether this is the case, and if so, to determine the best ways to protect these unique subspecies.<sup>1</sup>

Mining Company's proposed impoundment of the areas surrounding Dolphin Island with permanent salt ponds would completely eliminate the ecological functions that has occurred in association with this island through time. Furthermore, the proposed industrialization would certainly eliminate the aesthetic values of Dolphin Island as one of GSL's stand-out landscapes.

Further, the proposed doubling of Gunnison Bay pond expansion suggests that Mining Company intends to expand its acreage operation in its Bear River Bay ponds to accommodate the salts concentrated from the new westside ponds. This, in turn, suggests Mining Company intends to inundate 8,000 acres of ponds now under lease from state lands. Such expansion would inundate high-value wildlife habitat and would exacerbate the natural hydrology of the area, which regulates habitat balance and subsequently influences bird use in one of the key bird-use-areas of GSL.

Gunnison Bay and Bear River Bay of the Great Salt Lake are an integral part of an aquatic bird conservation area of hemispheric, even world-wide, importance. Gunnison Bay's open water is important to several avian species of conservation

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<sup>1</sup> Further use of Dolphin Island by wildlife is described in the Utah Division of Wildlife Resources publication *Small Islands of the Great Salt Lake*, by Edwin V. Rawley, 1976.

concern during certain periods when it can provide their habitat needs. Its shorelines are important to a regionally and nationally targeted shorebird for conservation and protection. It holds the single most important island used by colonial nesting birds at the GSL.

This American White Pelican Colony may currently be the largest single breeding population in North America. It is most likely the most secure. Mining Company's proposed added development of salt ponds and dikes will directly compromise these resources and will continue to erode the security of the most -protected and most-secure nesting site for two bird species of conservation concern for which Utah has primary stewardship responsibility.

Likewise, Bear River Bay and its wetlands serve as the primary forage area for pelicans and many other fish-eating species. The biologically diverse bay supports a significant proportion of birds using the ecosystem. The entire bay is as important to the birds that use the large and nationally-recognized Bear River National Wildlife Refuge as the area designated as refuge itself. The bay can not be separated from the managed areas of the national refuge or Harold Crane WMA, because all portions of the bay function in tandem to support the birds that use the area. In short, these places are Utah and national public trusts: valued public trusts that the State of Utah must protect as part of our stewardship and heritage.

I request and strongly urge that you not allow Mineral Company or any other industrial concern to develop additional ponding and diking in Gunnison Bay or elsewhere in GSL, and that you take additional steps to secure this important wildlife habitat in perpetuity.

Sincerely,

/s/

Don S. Paul  
5928 River View Circle  
Mountain Green, Utah 84050

Department of Anthropology  
Utah State University  
Logan, Utah 84322-0730

December 30, 2008

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Salt Lake City, Utah 84116-3154

Re: Comments on Proposed Mineral Lease of 37,083 Acres of Sovereign Lands Near  
Dolphin Island, Great Salt Lake.

Dear RDCC Members, Mr. Styler, Mr. Buehler and Mr. Grierson:

I write to provide the following comments on the nomination by Great Salt Lake Minerals ("Mining Company") of 37,083 acres of Great Salt Lake sovereign lands for the mining of mineral salts. Mining Company seeks to lease over 37,000 acres in order to construct giant evaporation ponds on the mudflats and in shallow waters of Great Salt Lake, thereby converting huge areas of the Great Salt Lake Ecosystem into an industrialized mining operation.

My qualifications enable me to provide comments concerning potential impacts to the cultural resources, including prehistoric burial sites, surrounding Great Salt Lake should Mining Company's proposed expansion be approved. I currently serve as Professor of Anthropology at Utah State University, where I have taught since 1988. I have conducted archaeological research since 1972, and have directed over 50 research projects in the western United States and the country of Jordan. My writings include over 50 published articles and 80 research reports. I have served as President of the great Basin Anthropological Association and as editor of the journal Utah Archaeology.

Impacts to the lake's cultural resources should be addressed in several ways prior to any approval of the proposed expansion. First, state agencies should conduct a thorough review of

existing site records, reports, and scientific studies, which comprise a sizable volume of information. Second, the state should survey of all areas potentially subject to adverse effects from direct or indirect impacts to cultural resources. Third, the state should initiate consultation with the Northwestern Band of the Shoshone Nation, the primary tribal stakeholder for the northern reaches of Great Salt Lake.

With regard to areas with cultural resources most likely to be adversely impacted by the proposed expansion, Clyman Bay and Bear River Bay comprise two significant areas worthy of heightened scrutiny in the state's survey of Great Salt Lake cultural resources. For example, potential impacts from the proposed expansion in Clyman Bay will most likely result from alterations to existing roads and/or the construction of new roads, and from the indirect impacts of increased human activity along these access corridors. Existing cultural resource data suggest that most cultural resources are located on the alluvial fans and mountain flanks bordering the western shore of Clyman Bay.

Likewise, in the area around Bear River Bay, a sizable body of cultural resource data shows that the "uplands" east of the existing Mining Company ponds have some of the highest densities of Fremont-period archaeological sites in the state. Importantly, the entire area stretching eastward from Mining Company's eastern dikes all the way to Interstate 15 harbors hundreds of prehistoric human burials of Fremont age (A.D. 900 – 1300). The human remains in this area are Fremont. The archeological importance of these sites is well-established in the existing literature housed at the Utah Division of State History. Indeed, the density of prehistoric human burials in this area is one of the highest ever documented in the American West.

In addition, the area due north of Mining Company's northernmost ponds in Bear River Bay also exhibits a high frequency of prehistoric human burials. A preliminary study housed at the Utah Division of State History indicates that the human remains in this area are post-Fremont (post A.D. 1300). If so, these burials are likely to be lineal ancestors of the living tribes in the region. Such connection between pre-historic and living people demonstrates the need for not only further research, both regarding existing data and in field surveys, but also consultation with tribal members regarding these cultural resource sites.

I strongly urge members of the RDCC, the Department of Natural Resources, and the Division of Forestry, Fire and State Lands to conduct this research and consultation to ensure that Mining Company's proposed expansion will not harm cultural resource values and archeological sites in and around Great Salt Lake. Until this necessary information is gathered and examined, you should reject the proposed expansion.

Thank you for the opportunity to provide these comments. I request that you carefully consider them and provide a detailed response to each point.

/s/ Steven R. Simms

Steven R. Simms  
Professor of Anthropology  
Utah State University  
(435) 797-1277



## WEBER STATE UNIVERSITY

John F. Cavitt, Ph.D.  
Department of Zoology  
Weber State University  
Ogden, UT 84408-2505  
July 18, 2007

Lynn de Freitas  
Executive Director,  
FRIENDS of Great Salt Lake  
Salt Lake City, UT

Dear Lynn:

I am writing to express my concern with the Utah Division of Forestry, Fire and State Lands decision to allow Great Salt Lake Minerals to lease additional land within the Gunnison Bay area. As you know, my research has focused exclusively on Great Salt Lake shorebird ecology and behavior. During this past breeding season, my research laboratory coordinated and implemented a lake-wide breeding survey of Snowy Plover for the US Fish and Wildlife Survey. This survey encompassed only the breeding period from May 7 – June 7. Our crews surveyed over 260 locations throughout the entire Great Salt Lake ecosystem, including Gunnison Bay and sites within the area proposed for construction of evaporative ponds by Great Salt Lake Minerals. Although we did not locate Snowy Plover within the area under consideration, we did observe both breeding and foraging birds north of this site.

It is my judgment that additional survey data are required to ensure that the proposed activities will not remove critical habitat for this species of conservation concern. Snowy Plover, other shorebirds and waterbirds may utilize this area of the lake during the early spring and fall migrations as well as in other breeding seasons when lake levels are closer to the long-term average. Given the hemispheric importance of the Great Salt Lake to shorebirds, it is imperative that these decisions be made only after considerable deliberation and analysis.

Sincerely,

John F. Cavitt, Ph.D.



## **WESTERN RESOURCE ADVOCATES**

Advancing Solutions for the Western Environment

December 3, 2007

Jason Gipson, Project Management  
U.S. Army Corps of Engineers  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010  
jason.a.gipson@usace.army.mil  
**VIA Email and U.S. Mail**

Re: Public Comments Relative to Public Notice SPK-2007-00121 – Proposed 33,000-acre Expansion of Solar Evaporation Ponds on Great Salt Lake

Dear Jason,

Thank you for the opportunity to provide the U.S Army Corps of Engineers (Army Corps) with preliminary comments relative to Public Notice SPK-2007-00121 – Proposed 33,000-acre Expansion of Solar Evaporation Ponds on Great Salt Lake (GSL Minerals Proposal). I make these comments on behalf of FRIENDS of Great Salt Lake, National Audubon, League of Women Voters of Salt Lake, League of Women Voters of Utah, Wasatch Audubon, Utah Rivers Council, Utah Chapter of the Sierra Club, Utah Waterfowl Association, Utah Airboat Association and Bryan Dixon (collectively “FRIENDS”). We hope that you will gather the data necessary to carefully consider the following issues and concerns as you under take your statutory and regulatory obligations in reviewing the GSL Minerals Proposal.

### **I. Introduction**

As you know, local, national and international value of Great Salt Lake, its islands, and its wetlands cannot be overstated. Overall, 257 avian species use the Great Salt Lake ecosystem. Of these, 112 species are exclusively associated with the lake’s varied wetland areas, while 117 species reportedly nest on the lake’s periphery or on its islands. At least 33 species of shorebirds representing 2 to 5 million individuals use Great Salt Lake annually, stopping along routes that take them elsewhere in North, Central or South America. In addition, up to 5 million waterfowl migrate through the lake each year.

Approximately 30 percent of the waterfowl migrating along the Pacific Flyway depend upon the Great Salt Lake wetlands. For these migrants, the lake provides a critical food supply, allowing them to restore depleted energy reserves and fuel up for the rest of their migrations, sometimes doubling their body weight before they leave. In recognition of its role in these international flights, Great Salt Lake is designated as **one of only eight** sites with a “hemispheric” designation – as opposed to regional or international designation – of the 40 Western Hemisphere Shorebird Reserve Network sites in the United States.

The importance of Great Salt Lake to the birds of the Americas is borne out by the sheer numbers that depend on its resources, including

- 60 to 80 percent of the world’s population of Wilson’s phalaropes,
- One of the two largest staging concentrations of eared grebes in North America,
- The world’s largest breeding population of white-faced ibis and California gulls,
- Over half of the entire breeding population of snowy plovers west of the Rocky Mountains,
- More than three quarters of the entire western population of tundra swan,
- One of the three largest breeding colonies of American white pelicans, and
- One of the ten largest wintering populations of bald eagle in the lower 48 states.

Not surprisingly, hundreds of thousands of bird watchers comb the shores of Great Salt Lake to be rewarded by incredible views of feeding, flying and nesting birds that journey thousands of miles to gorge on the bounty of our nation’s largest inland “sea.” The lake also attracts recreationists enjoying other water-based activities such as sailing, boating, rowing, floating, wading and kayaking. Others hike, ride horseback and mountain bike to enjoy scenery, solitude and wildlife. Great Salt Lake also supports a robust community of waterfowl enthusiasts who not only enjoy hunting but are working to preserve and protect Utah’s waterfowl, its unique and rich habitat and its rich heritage.

The North Arm of Great Salt Lake, where the majority of the proposed expansion is planned, is an area of particular significance to the lake’s ecosystem. Commenting specifically on the GSL Minerals Proposal, the Utah Division of Wildlife Resources (DWR) and the U.S. Fish and Wildlife Service (FWS) noted that the North Arm of Great Salt Lake becomes critical to migratory and other waterbirds during high water years. Exhibits 2 & 3, attached. This is because, during these times, the salinity in the North Arm best supports brine shrimp – an important food source for many of the lake’s birds. See DWR Comments at 2-3 (documenting the crucial importance of the North Arm to wildlife during the 1980s and early 1990s); July 19, 2007 Letter from Don Paul to Mr. Styler and Mr. Buehler at 2, Exhibit 7, attached (“During periods when the GSL elevation occurs between 4193’ and 4206’ above sea level (asl), there are several aquatic bird species that occur at the lake in continental and hemispheric numbers of importance at the GSL and largely in the Gilbert Bay. These are the Wilson’s Phalarope, Red-necked Phalarope, and the Eared Grebe. Some years these populations are in excess of 1,200,000, and 1,300,000 respectively during their seasonal occurrence at the GSL. At times these

numbers of Wilson's Phalaropes and Eared Grebes represent 50 to 70% of the population that occur in the world.");<sup>1</sup> Great Salt Lake Mineral Leasing Plan at 33 ("[D]uring the high water years from 1983 to 1987, there were increase populations of brine shrimp in the north arm as salinity decreased [and] . . . eared grebes followed the brine shrimp into the north arm, abandoning sites along the Antelope Island causeway . . .").

As recognized by the Utah Legislature, the North Arm is of significant importance as a refuge for one of the last remaining populations of the American white pelican, which breeds on Gunnison Island.<sup>2</sup> In addition, the North Arm offers outstanding recreational opportunities. This unique and remote area is enjoyed for its stark beauty, wildlife and bird life and stunning landscapes. That this area is more difficult to access and less frequented than the South Arm does not diminish its significant recreational and aesthetic value. Moreover, although navigation to and from this area is currently impeded by the causeway, there is no reason to believe that this obstruction is permanent<sup>3</sup> and every reason to believe that the demand for access to this area will increase.

Likewise, Bear River Bay and the Willard Spur are of outstanding value for both recreation and wildlife habitat. Here there is a fishery that persists when the lake elevation is higher than 4,200 feet above sea level of vital importance to piscivorous birds. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake.

Recognizing these values, DWR has underscored the tremendous ecological importance of the lease parcels the applicant proposes to develop:

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<sup>1</sup> Mr. Paul also states: "This was the case in the high lake years of the 1980s (1983 to 1988). The migratory populations of Phalaropes and Eared Grebes were totally reliant upon Gunnison Bay for the food and energy reserves needed to complete their annual winter migrations which sometimes exceed 2,000 miles. Much of the foraging of these species took place along the west shorelines of promontory point, around Gunnison Island and west toward the Hogup Mountains (the ostensible GSL Minerals diking and ponding site), (DWR SLO files). *Id.*

<sup>2</sup> Utah Code Ann. § 23-21a-2 ("The legislature of the state of Utah recognizes that the number of breeding sites of the American white pelican has been reduced from in excess of 50 prior to 1932 to only seven major sites in 1976 as a result of the removal of water barriers around breeding sites, loss of food supply, and **human disturbance of nesting colonies**. The legislature of the state of Utah further recognizes that Gunnison Island in the Great Salt Lake, one of the seven remaining pelican rookeries in North America, produces over 20% of the world's population of the American white pelican, and is the only remaining major pelican rookery that does not have refuge status. It is hereby declared to be the policy of the state of Utah that areas that will support certain threatened life forms shall be preserved for their benefit and for the benefit and enjoyment of present and future generations of people.") (emphasis added)

<sup>3</sup> The causeway has stood only since 1959, when it replaced a trestle built in 1902.



These lands . . . are valued by DWR for periods when lake level falls below 4200' in Bear River Bay. DWR is particularly interested in lands which are north and northwest of the existing dikes . . . because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural lake within the bay.

IMC Kalium/DWR Memo, August 28, 1998 at 3, Exhibit 8. Moreover, this area of the lake receives high levels of recreational use, is appreciated for its scenic beauty by many, and is critical to navigation of the lake. Bear River Bay and Willard Spur enjoys a high number of days of recreational use. Air boat operators and others access this area though a public access site and two guiding services also operate in the area. There are at least two private duck clubs that are located along the shore of this area.

## **II. The Great Salt Lake Minerals Proposal**

Currently, Great Salt Lake Minerals operates 43,000 acres of solar evaporation ponds on Great Salt Lake. According to the company, this includes 21,000 acres of salt ponds in Clyman Bay on the west side of the lake, a 21 mile long canal running along lake bottom from west to the east side of Great Salt Lake, and 22,000 acres of solar ponds in Bear River Bay on the east side of the lake.

To this existing 43,000 acre facility, Great Salt Lake Minerals plans to add significant additional facilities. On the west side, in Clyman Bay, the company proposes to build an additional 18,000 acre solar pond, and a new 7,000 acre pond, as well as a new feed canal into the lake and a new pump station powered by a diesel engine. The company maintains that it currently leases much of the land necessary to build this 7,000 acre pond and what it does not lease is presently leased by a private individual. On the east side of the lake, in Bear River Bay, the company intends to build a new 8,000 acre solar pond. Great Salt Lake Minerals contends that it currently holds leases sufficient to construct this 8,000 acre pond in Bear River Bay.

In sum, Great Salt Lake Minerals seeks to expand its 43,000 acre operation by 25,000 acres<sup>4</sup> on the west side and 8,000 acres on the east side, for a total expansion of 33,000 acres, bringing the size of its operations to 76,000 acres or 119 square miles. This means that Great Salt Lake Minerals will have under development an area larger than Salt Lake City, which is 110 square miles – an area that takes up 13 percent of the total area of the lake when waters are low, and covers 7.4 percent of the lake when its levels are average.<sup>5</sup> Because the existing and proposed development is concentrated in the North Arm of the lake and in Bear River Bay, as well as in shallow water and along the shoreline, the

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<sup>4</sup> According to Great Salt Lake Minerals, the total proposed expansion for the west side of the lake will cover 25,000 acres. However, 1,500 acres that is slated to be used for this development is already leased to a private entity. As a result, Great Salt Lake Minerals is nominating 23,088 additional acres for leasing in this area.

<sup>5</sup> See <http://geology.utah.gov/utahgeo/gsl/index.htm>, the website of the Utah Geological Survey, for area calculations based on elevation of the lake.

impacts of the mining operations will be felt even more acutely in these parts of the lake and in these types of ecosystems.

### **III. Legal Framework**

#### **A. The Clean Water Act**

Section 404 of the Clean Water Act, 33 U.S.C. § 1344, prohibits the filling or dredging of waters of the United States without first receiving a § 404(b) permit from the Army Corps. 33 U.S.C. § 1344(a), (d). A permit may not be issued if (i) there is a practicable alternative which would have less adverse impact and does not have other significant adverse environmental consequences, (ii) the discharge will result in significant degradation, (iii) the discharge does not include all appropriate and practicable measures to minimize potential harm, or (iv) there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Army Corps guidelines for permit issuance. 40 C.F.R. § 230.12(a)(3)(i-iv).

For non-water dependent projects, it is presumed that a practicable alternative exists and the burden to clearly demonstrate otherwise is on the applicant. *Id.* § 230.10(a)(3); Resource Inv's, Inc. v. United States Army Corps of Eng'rs, 151 F.3d 1162, 1167 (9th Cir.1998). "Practicable" is defined at 40 C.F.R. § 230.10(a)(2) as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." The presumption for a non-water dependent project that a practicable alternative exists requires that an applicant make a persuasive showing concerning the lack of alternatives. Sylvester v. United States Army Corps of Eng'rs, 882 F.2d 407, 409 (9th Cir.1989) (internal citation omitted). Finally, a permit may not be issued "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem." 40 C.F.R. § 230.10(d).

#### **B. NEPA**

The National Environmental Policy Act (NEPA) requires federal agencies to prepare an EIS prior to taking major federal action. 42 U.S.C. §§ 4321-4370d. The Army Corps's issuance of an individual 404 permit is a major federal action. The purpose of NEPA is to require agencies to consider environmentally significant aspects of a proposed action, and, in so doing, let the public know that the agency's decisionmaking process includes environmental concerns. The administrative record must demonstrate that the agency in question follows NEPA procedure, which requires a "hard look" at the environmental consequences of the proposed action.

NEPA requires analysis of the purpose and need for the proposed project, 40 C.F.R. § 1502.13, along with a full and fair analysis of all reasonable project alternatives. 42 U.S.C. § 4332(2)(C)(iii), (E); 40 C.F.R. § 1502.1. In fact, the regulations implementing NEPA refer to the comparison of alternatives as the "heart of the environmental impact statement." 40 C.F.R. § 1502.14. Agencies must "rigorously explore and objectively evaluate all reasonable alternatives," then "[d]evote substantial treatment to each

alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits,” and explain why other alternatives were eliminated from detailed consideration. Id.

### C. NHPA

Congress enacted the National Historic Preservation Act (NHPA) in 1966 because it found that “historic properties significant to the Nation’s heritage are being lost or substantially altered, often inadvertently, with increasing frequency[.]” 16 U.S.C. § 470(b)(3); see National Mining Association v. Slater, 167 F.Supp.2d 265, 271 (D.D.C. 2001) (reversed on other grounds National Mining Association v. Fowler, 324 F.3d 752 (D.C.Cir. 2003)). As discussed below, the shores of Great Salt Lake are rich in prehistoric archeological sites. To serve the public interest in “the preservation of this irreplaceable heritage,” Congress declared as the goal of the Act, the maintenance and enrichment of this “vital legacy” for future generations of Americans. 16 U.S.C. § 470(b)(4); see Southern Utah Wilderness Alliance v. Norton, 326 F.Supp.2d 102, 108 (D.D.C. 2004).

NHPA accomplishes its purposes by “requir[ing] each federal agency to take responsibility for the impact that its activities may have upon historic resources. . . .” City of Grapevine v. Dep’t of Transp., 17 F.3d 1502, 1508 (D.C.Cir. 1994). Specifically, pursuant to section 106 of the Act, a federal agency “shall, prior to the approval of . . . any license . . . take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register.” NHPA, § 106, U.S.C. § 470f. An undertaking is any “project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including . . . those requiring a federal permit, license or approval . . . .” 36 C.F.R. § 800.16(y). Section 106 also requires that the agency afford the Advisory Council on Historic Preservation (Advisory Council) “a reasonable opportunity to comment” on the undertaking. Id.

The Advisory Council has promulgated regulations setting forth how federal agencies must comply with section 106. See, 36 C.F.R. 800. First, an agency official “shall make a reasonable and good faith effort” to identify historic properties<sup>6</sup> that may be affected by the undertaking, and evaluate whether these properties are eligible for the National Register. 36 C.F.R. § 800.4(b) & (c); see 36 C.F.R. § 60.4 (criteria for assessing eligibility). The agency will next assess the possible effects of the undertaking on any eligible historic properties found, 36 C.F.R. §§ 800.4(d), 800.5(a), and determine whether any effects will be adverse. 36 C.F.R. § 800.5. “An adverse effect is found when an undertaking **may** alter, directly or indirectly, **any** of the characteristics of a historic property that qualify the property for inclusion in the National Register.” 36 C.F.R. §

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<sup>6</sup> Historic properties are defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior.” 36 C.F.R. § 800.16(l)(1).

800.5(a)(1) (emphasis added).<sup>7</sup> If the agency finds potential adverse effects, it must seek ways to avoid or mitigate those adverse effects. 36 C.F.R. § 800.6. If the agency is unable to resolve the adverse effects of the undertaking, it must obtain comments by the Advisory Council and consider these in any decision to approve the undertaking. 36 C.F.R. § 800.7.

Importantly, at each step, section 106 requires consultation and communication among agency officials, the relevant State Historic Preservation Officer (SHPO), affected tribes and other interested persons, including the public.<sup>8</sup> See C.F.R. § 800.2; see also City of Alexandria, 198 F.3d at 124; SUWA v. Norton, 326 F.Supp.2d. at 108.<sup>9</sup> The purpose of this consultation is to involve agency official and others interested parties together in the identification of “historic properties potentially affected by the undertaking, assess[ment of] its effects and [the] seek[ing of] ways to avoid, minimize or mitigate any adverse effects on historic properties.” 36 C.F.R. § 800.1(a); see also SUWA v. Norton, 326 F.Supp.2d. at 108.

Finally, section 106 requires the agency to document its compliance with the process sufficiently “to enable any reviewing parties to understand” the basis of agency “determination, finding, or agreement” under the regulations. § 800.11(a); see also, e.g. § 800.11(d) (documentation requirements for finding of no historic properties affected); § 800.11(e) (documentation requirements for finding of no adverse effect or adverse effect).

#### **IV. General Comments**

##### **A. Average Conditions versus Variable and Extreme Conditions**

As you know, the surface area, volume and salinity of Great Salt Lake vary considerably, based largely on weather. These variable conditions have significant impact on wildlife and recreation. Indeed, wildlife, including birds, and wildlife habitat are more vulnerable to, and their viability and health more influenced by, extreme rather than by average

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<sup>7</sup> “Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.” 36 C.F.R. § 800.5(a)(1).

<sup>8</sup> As the regulations make clear “[t]he views of the public are essential to informed Federal decision-making in the section 106 process. The agency official shall seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effect on historic properties . . . .” 36 C.F.R. § 800.2(d)(1). In addition, “[t]he agency official must . . . provide the public with information about an undertaking and its effect on historic properties and seek public comment and input.” 36 C.F.R. § 800.2(d)(2).

<sup>9</sup> The Advisory Council regulations require consultation at every step of the section 106 process, including, for example, the scope of identification efforts, 800.4(a)(3), the identification of historic properties, 800.4(b); the evaluation whether a property is eligible for listing, 800.4(c), a finding of non historic properties effected, 800.4(d), 800.5(c), the application of the criteria of adverse effect, 800.5(a)(1), and the resolution of adverse effects. 800.6(a).

conditions. Therefore, the Army Corps must base its analysis of the GSL Minerals Proposal **not** on average conditions, regardless of the averaging period, but on some measure of extreme conditions.

The discussion below focuses on many factors that vary in intensity and impact based on the condition of the lake – for example, predator access is increased in low water years, the importance of the North Arm to eared grebes is increased in high water years and impediments to water flows and recreation are increased in low water years. Therefore, the only way that the Army Corps can access the impacts of the planned project is to consider its impacts in high water and in low water years. At a minimum, the Army Corps must undertake all its analysis and decisionmaking relative to the proposed project based on **each** of water levels representing the following elevations: 4211.85 feet (representing two historic periods of high water), 4191.3 feet (representing two historic periods of low water), and the mean average elevation of 4202 feet above sea level.<sup>10</sup>

## B. Water Use

There are many mineral salts and other similar extractive industries located within Great Salt Lake that use vast quantities of lake water.<sup>11</sup> It is imperative that the Army Corps determine not only the total annual water volume to be used by the GSL Minerals Proposal, but also the total annual water use of Great Salt Lake Minerals' current operations, as well as the operations of other industries drawing on lake waters. Only with this information can the Army Corps determine the individual, cumulative and indirect impacts of the planned project on the aquatic community, the environment and the public interest. The extent of this water use will impact lake volume, water quality, wildlife habitat, recreation and other relevant environmental values. This is particularly important because the lake's current elevation of 4194.4 (near Saline) is close to the all-time low elevation.

The draw down of lake waters by the project, individually and cumulatively, will have widespread impact – particularly when the lake is at low levels. During low lake levels, water will be taken from the main body of the lake and placed in artificial evaporation ponds, all, or parts of which, would not be otherwise underwater. This decreases the volume of the lake. Under the proposed scenario, approximately 33,000 acres of the lake will be diked and converted into evaporation ponds. Assuming the ponds were covered with one foot of water, these proposed ponds alone would entail the consumption of 10.7 **billion** gallons of water.<sup>12</sup> This amount of water loss, particularly when multiplied cumulatively to include all mineral salts and other consumptive uses, will affect the level of Great Salt Lake and its depth, particularly in key locations, such as between the proposed North Arm dike system and Gunnison Island. In turn, low lake levels,

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<sup>10</sup> See: <http://ut.water.usgs.gov/gslelevgraphs/GSL.WSAlt.Aug07.pdf>.

<sup>11</sup> Any suggestion that this water use is non-consumptive belies logic. The water impounded into the evaporation ponds is taken out of a relatively intact ecosystem and sequestered for industrial purposes in ponds.

<sup>12</sup> Of course, the public has no idea how much water the proposed project will use. This information must be made public and incorporated into the Army Corps decisionmaking.

exacerbated by this consumptive use, would not only affect water quality, but would also make it that much more probable that predators and even people could access Gunnison Island via a land bridge or bridges.<sup>13</sup> This occurred during the low lake level of the 1960s when the island was trespassed by humans with goats and many young pelicans were killed using .22 rifle ammunition.<sup>14</sup>

Thus, included in the Army Corps analysis should be a determination of the draw down of lake water that will result as a consequence of the proposed project. This determination should include an assessment of Great Salt Lake Minerals' ongoing efforts to make its existing facilities more efficient, thereby using more lake water. These calculations then must be applied to determine impact on water levels to determine both individual and cumulative impacts on water quality as well as the potential for creating more predator and human access to Gunnison Island and other important wildlife habitats. In making these determinations, the Army Corps should rely on the recently completed USGS maps that show the elevation of the bed of Great Salt Lake in detail. The North Arm map indicates that the lake bottom between the west side of the North Arm and Gunnison Island is essentially dry at lake elevations between 4192 and 4193 feet above sea level. In 2005, the Great Salt Lake level at the gage station on Promontory Point registered between 4194 and 4195.

### **C. Purpose and Alternatives**

The stated purpose of the GSL Minerals Proposal is unreasonably narrow and erroneously and artificially restricts the range of practicable alternatives to the project. This is particularly true here where the applicant seeks strictly private gain by filling an enormous area of a water of the United States held in trust for the citizens of Utah. The purpose of the project should be rewritten more broadly so that less damaging practicable alternatives – such as continuing to acquire potassium off-site – are viable and considered in depth.

However, if the Army Corps persists in unduly restricting the purpose of the project, the agency must consider the less damaging alternative of locating evaporation ponds outside of the waters of the United States – above the bed of Great Salt Lake. Likely the most appropriate location for such ponds would be on the west side of the lake, including in and around the Newfoundland Evaporation Basin. Examination of alternatives that construct evaporation ponds some distance from the shores of the lake should be considered.

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<sup>13</sup> We know, for example, that historically, there has been land bridge access to Gunnison Island when the South Arm was at approximately 4193 feet above sea level, less than two feet lower than current lake levels.

<sup>14</sup> Utah Fish and Game publication and personal testimony of Jack Rensel, DWR, retired.

In any case, because the GSL Minerals Proposal is a non-water dependent project,<sup>15</sup> the presumption is that a practicable alternative exists. This presumption holds unless clearly demonstrated otherwise. Indeed, the Army Corps may not issue a § 404 permit unless the agency has independently verified all relevant information and provided detailed, clear and convincing information **proving** that an alternative with less adverse impact is impracticable. Here, such analysis underscores the need to restate the purpose of the project and undertake rigorous exploration of practicable alternatives.

#### **D. Cultural Resources**

Cultural resources are evaluated by a field inventory prior to ground disturbance to make a determination of significance and adverse effect. Consultation among agencies and the relevant Native American tribes is required by federal and state regulations. Once the project moves to the construction phase, the areas of ground disturbance may be monitored so that any new discoveries unearthed by construction can be inventoried and evaluated for significance.

The GSL Minerals Proposal for Bear River Bay on the east side of the lake is adjacent to an area that is one of the richest archaeological landscapes in the state of Utah. The areas immediately east and northeast of the existing Great Salt Lake Minerals ponds harbor hundreds of campsites, villages, and human burials. Most of the cultural resources in those areas date to the Fremont period (A.D. 800 – 1200 in the case of the Great Salt Lake area). Hundreds of archaeological sites and thousands of human bone/burials were discovered east and northeast of the company's ponds in the late 1980s and early 1990s after they were exposed by receding Great Salt Lake waters. Many more cultural resources remain in those areas and periodically come to light. Importantly, the area north of the existing the Great Salt Lake Minerals ponds also contains archaeological sites. Eleven human burials were recovered from that area in 2001. That area is less known, but seems to yield remains dating to the Late Prehistoric period (post A.D. 1300). The age of those remains is important because they are directly related to the living tribes of northern Utah; specifically the Northwestern Band of the Shoshone Nation.

Any ground disturbance in the areas bordering the existing the Great Salt Lake Minerals ponds in Bear River Bay will likely encounter abundant cultural resources significant for their scientific value and significant to the heritage and religious values of living Native American peoples.

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<sup>15</sup> The GSL Minerals Proposal is not water dependent. The relevant regulations state that where a project "does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose," it is not water-dependent. 40 C.F.R. § 230.10(a)(3). Plainly, mineral salts extraction need not occur within the water or a special aquatic site – it can occur on dry land. While access to Great Salt Lake may be necessary to extract minerals from Great Salt Lake water, that a pipe or pump may be located in the lake to gain access to the water does not mean that 33,000 acres of evaporation ponds must be located on the bed of the lake. Moreover, as Great Salt Lake Minerals currently gets its potassium from mines on dry land, there is nothing about obtaining this mineral that requires access to or siting in special aquatic sites, much less Great Salt Lake.

The proposal for Clyman Bay on the west side of Great Salt Lake may also encounter cultural resources. Less is known about that area, but the apparent absence of fresh water streams creating wetlands in that area may imply that cultural resources there will be fewer than in Bear River Bay. The proposed project area will have to be inventoried to make a determination of adverse effect. Furthermore, increased access to the area of Clyman Bay caused by the expansion of the ponds may increase use and result in adverse effects on cultural resources outside of the primary project area. This may be significant for the proposed development in Clyman Bay because of the existence of dry caves in the rocky ridges and mountains bordering the west side of Great Salt Lake. As stated above, historic preservation laws and regulations also apply to indirect impacts to cultural resources.

#### **E. Seismic Concerns**

Five submerged segments of the Great Salt Lake fault system have generated magnitude 6.8 - 7.2 earthquakes in the past and will do so in the future. At least four of these, the Rozelle, Promontory, Fremont, and Carrington segments, directly threaten the proposed industrial expansion to the northwest arm of the lake. Ground-shaking accelerations as great as 1.0 g and tsunami waves as high as three to four meters generated by sublacustrine fault ruptures could cause catastrophic oil and gas spills into the lake from pumping facilities, pipelines, and supply trucks supporting both proposed and existing evaporation ponds. Such spills could reasonably be expected to destroy bird, brine shrimp, and brine fly habitats lake-wide in a single event. No consideration of this potential disaster scenario has been addressed to date.

#### **F. Existing Condition of Great Salt Lake**

Plainly, in order to determine accurately the impact of the proposed project on the aquatic ecosystem, the physical and chemical make up of lake waters, and on recreation, aesthetics and the public interest, the current condition of Great Salt Lake, with respect to these values, must be determined.<sup>16</sup> This entails, among other things, using the most precise and current information available – data that reflect all development in and around the lake, all remaining habitat and the conditional, the functionality of remaining habitat and all lost habitat. Careful distinctions between types of habitat must be made as well.

Furthermore, to determine the impacts of the GSL Minerals Proposal on wild and aquatic life, particularly birds, calculations of lost and remaining habitat must be made on a species specific basis. In other words, any suggestion that a particular percentage of habitat is left or that a certain number of acres remains intact must take into account whether a specific species of bird will actually use that habitat. Therefore, it is necessary to examine individual and cumulative impacts to a particular species of bird, thereby taking a species specific approach to habitat availability and loss.

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<sup>16</sup> This includes a lake-wide analysis of past, current and future carrying capacity for waterbirds.



In addition, the maps depicted and relied upon in the public information documents are outdated. Since it is critical to consider the impacts of this project on the lake as it is today and to take into consideration existing fragmentation in both the North Arm and South Arm, the Army Corps must base its decision making on current maps.<sup>17</sup> The agency must use and present maps, such as satellite images, that depict **all** existing dike structures through out the lake.

### **G. Cumulative Impact Analysis**

To address cumulative impacts, the Army Corps must initially establish the geographical area in which cumulative impacts are to be considered. The geographic scope of the cumulative analysis will vary depending on the value at issue. For example, for migratory birds, the most appropriate scale for cumulative impacts will consider where the birds migrate to and from, and then determine how that migratory bird habitat has changed over time. In addition, the analysis must address impacts to the entire local ecosystem upon which these birds rely. This means, for example, that impacts to Utah Lake should be considered. Because migratory birds do not use higher level terrain, a boundary that uses elevation as a factor can be established to encompass the area within the Great Salt Lake watershed that migratory and other waterbirds use.

While this area of analysis is extensive, birds once used the entire watershed and wetland system encompassed by this area for habitat – at least until those wetlands were filled, many under 404 general and individual permits. In turn, mitigation efforts connected with these permits, have, in many cases, not been successful, resulting in a cumulative loss of habitat and functionality. In order to fully understand the cumulative impact to, for example, bird life and water quality, the agency must understand how habitat in this extended area has been impacted.

Water quality is another important parameter for cumulative impact analysis. To address these impacts, the Army Corps should reference the lowest water quality station in each sub-watershed around the lake and assume it represents the health of the entire sub-watershed. With that information, the agency could identify water quality issues and determine how the planned project would further aggravate those problems.

Moreover, the agency's impact analysis must consider past activities that cumulatively impact the aquatic ecosystem, as well as other relevant values. Great Salt Lake Minerals and other similar extractive industries have been operating on the lake for well over a half century. Likewise, the Great Salt Lake ecosystem has been experiencing a net loss of the waters of the United States, including connected wetlands, for decades prior to the advent of these development activities. Therefore, it is incumbent on the Army Corps to

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<sup>17</sup> The Army Corps should, at a minimum, use the new high-resolution bathymetric maps of the South Arm (2005) and the North Arm (2006) prepared by Robert Baskin and coauthors from the USGS Water Resources Division in Salt Lake City, accessible at <http://www.gelib.com/salt-lake-bathymetric.htm>.

consider, in its cumulative impact analysis, the effects of all past activities for which information is available from at least the beginning of the 20<sup>th</sup> century onward.<sup>18</sup>

Finally, for many of the birds that rely on Great Salt Lake, this ecosystem is but one factor in their ability to survive and thrive. Therefore, some analysis must be undertaken to determine how impacts to other key ecosystems will cumulatively affect these birds. By the same token, the Army Corps must also consider the condition of other saline lakes in the West.

## **H. The Lake Effect**

As you know, the "lake effect" is responsible for much precipitation, particularly in the form of snowfall, along the Wasatch Front. The planned minerals extraction project may adversely impact the lake effect by increasing evaporation from Great Salt Lake, reducing lake volume, and decreasing water temperatures in the winter by making the lake more shallow. These and other potential consequences must be analyzed, cumulatively and individually.

## **I. Section 404 and NEPA Analysis**

For actions subject to NEPA, the analysis of alternatives required for the NEPA environmental documents will in most cases provide the information for the evaluation of alternatives under the CWA Guidelines. If, however, the NEPA documents do not consider the alternatives in sufficient detail to respond to the requirements of the Guidelines, it may be necessary to supplement NEPA documents with additional information. 40 C.F.R. § 230.10(a)(4). Moreover, the Army Corps must comply with the relevant regulations, including by making all relevant factual findings. This means that, whether under the requirements of NEPA or the Clean Water Act, the Army Corps must additionally consider the following, more specific environmental impacts which focus on the agency's regulatory obligations:

## **V. More Specific Comments**

### **A. Section 230.10**

#### ***40 C.F.R. § 230.10 Generally***

Section 230.10 states that the Army Corps' "compliance evaluation procedures will vary to reflect the seriousness of the potential for adverse impacts on aquatic ecosystems" threatened by the proposed project. 40 C.F.R. § 230.10. Here, the potential for serious adverse impact is indeed serious. As the public notice itself states, "the applicant asserts that approximately 30,713.75 [surface] acres of waters [of the United States] **will be lost** due to project construction under the proposed alternative." Public Notice at 6 (emphasis

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<sup>18</sup> See REGL 84-9, 26 Jul 84.

added).<sup>19</sup> Moreover, the waters to be lost comprise one of the most ecologically significant aquatic ecosystems in the Western Hemisphere. Thus, adherence to the relevant guidelines must be unwavering and must reflect the sheer immensity of the proposed project.

#### ***40 C.F.R. § 230.10(a)***

That said, the Army Corps must consider, as alternatives to the GSL Minerals Proposal, “[a]ctivities which do not involve a discharge or dredged or fill material into waters of the United States.” 40 C.F.R. § 230.10(a)(1)(i). In addition, here, where the proposal will discharge into a “special aquatic site” and is not water-dependent, “practicable alternatives that do not involve special aquatic sites are presumed to be available” and alternatives that which do not involve special aquatic sites are assumed to result in less adverse environmental impacts. 40 C.F.R. § 230.10(a)(3).

As mentioned above, the stated purpose of the GSL Minerals Proposal is unreasonably narrow and erroneously and artificially restricts the range of practicable alternatives to the project. This overly constrained statement of the purpose of the project prohibits compliance with these regulatory requirements. In any case, the Army Corps’ analysis must include a thorough and independent consideration of all less damaging practicable alternatives to the proposed project, including those that do not involve discharge into waters of the United State and to not involve special aquatic sites.

#### ***Section 230.10(b)(1) – Water Quality***

Section 230.10(b)(1) prohibits discharge of dredged or fill material into a water of the United States where it will “cause or contribute to . . . a violation of any applicable State water quality standard.” 40 C.F.R. § 230.10(b)(1).

Recognizing the importance of Great Salt Lake, not only to Utah, but to the Nation and the World, the Utah Division of Water Quality (DWQ) has appropriately designated the beneficial uses of the lake as:

for primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including the[] necessary aquatic organisms in their food chain, and mineral extraction.

Utah Admin. Code R317-2-6.5; see also 40 C.F.R. § 131.10(a) (“Each state must specify appropriate water uses to be achieved and protected.”); 40 C.F.R. § 131.11(a) (“For waters with multiple use designations, **the criteria shall support the most sensitive use.**”) (emphasis added).

As DWQ has acknowledged in this designation, clean water is critical to maintaining the health of the Great Salt Lake ecosystem and protecting recreation there. Water of high

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<sup>19</sup> As repeated throughout these comments, in addition to the loss of surface area of the lake, will be the loss of water volume, which will also be significant.

quality is necessary to keep the lake's wetlands functioning and the processes working to ensure an ample safe food supply for the millions of birds that depend upon it. Clean water is also necessary to protect recreation in and around Great Salt Lake – whether it involves bird watching, ducking hunting, wading or sailing.

As the GSL Minerals proposal will result in the loss of approximately 30,713.75 acres of waters of the United States and thereby will impair, if not destroy, the beneficial uses of 30,713.75 surface acres<sup>20</sup> of Great Salt Lake for primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including the necessary aquatic organisms in their food chain, the Army Corps may not issue a permit for the proposed project.

The Army Corps must consider the following factors in addressing the individual and cumulative impacts of the proposed project on water quality:

- Utah's narrative water quality standard;
- the achievement and protection of all designated beneficial uses of Great Salt Lake;
- significant mercury and selenium contamination of the lake and the potential of the project to exacerbate this contamination;
- expert concerns raised by FWS and DWR;
- reduction in open water in Bear River Bay and the resulting concentration of nutrients from sewage and irrigation sources;
- interruption of water flows caused by diking;
- impacts of fill material directly and indirectly;
- impacts of changes to substrate;
- impacts of evaporation of huge quantities of water;
- effects of pond flushing, including in the Bear River Bay area where the introduction of more salt would change salinity, and possibly change the size and length of the salt tongue and alter other ecosystem values, thereby impacting fisheries and other wildlife;
- the use of existing and proposed pump stations, fuels, trucks and other vehicles, gravity flow trenches, causeways and other infrastructure;
- potential catastrophic pollution of lake waters by an earth-quake-induced oil and gas spill or other contamination;
- cumulative impact of drought, including drought induced by global warming;
- cumulative impact of reasonably foreseeable population and development increases and increased water demand, run off and nutrient discharges;
- cumulative impact of all other current and proposed mineral salts extraction and other extractive industries; and,
- cumulative loss of wetlands and other ecosystem components that help to maintain or improve water quality.

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<sup>20</sup> As described elsewhere, in addition to the loss of surface acres, the planned project will result in the lost of some enormous, but undisclosed volume of water – particularly when considered over time. The impacts of the loss of surface as well as volume must be examined closely.

The Army Corps must also quantify and qualify and fully understand the impacts to water quality stemming from **existing** mineral salts extraction activity and analyze these impacts cumulatively, including water use, concentration of pollutants in evaporation ponds, and the flushing of evaporation ponds. In addition, to understand properly the impacts of the proposal on water quality, the agency must know the volume and quality of **all** water being used for **all** existing operations affecting the lake, as well as for the proposed expansion and consider the impacts of this water use on non-impounded areas of the lake.

#### *Section 230.10(c) – Significant Degradation*

As repeated above, the GSL Minerals Proposal will result in the loss of more than 30,000 surface acres of waters of the United States, as well as huge volume of water. The project will have significant adverse effects on wildlife, special aquatic sites, life stages of aquatic life, wildlife habitat, ecosystem diversity, productivity and stability, recreation, aesthetics, and other values. Therefore, the Army Corps may not legally issue a permit for the project. This is particularly true because, both individually and cumulatively, this project results in the loss of too many acres of waters of the United States and thereby jeopardizes the health of the remaining ecosystem and the survivability of the organisms and wildlife that depend upon it. Such a loss of habitat and functionality cannot be mitigated, especially given the types of special aquatic sites at issue and the poor track record of mitigation efforts around the lake.<sup>21</sup>

In any case, in its review of GSL Minerals Proposal, the Army Corps must consider individually and cumulatively the impacts of the project on all the values detailed in section 230.10(c).

In addition to those factors listed and discussed subsequently, the Army Corps must consider the following likely impacts from the planned project on navigation, public recreation, the public interest and aesthetics:

- The discharge of dredge or fill material will further limit navigation of and public access to the shoreline, as well as previously open waters of Great Salt Lake. This will in turn limit the ability of the public to recreate freely on the lake and will concentrate the public's use in a smaller area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas;
- The 8,000 acre expansion proposal will, at times, cut off water flows and access to and from Bear River Bay. This will severely limit the ability of the public to recreate freely on the lake and will concentrate public use in a smaller area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas;
- To the extent that discharge of dredge or fill material will adversely affect water birds and wildlife, as well as scenic values, public recreation that depends upon these values will be adversely impacted;

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<sup>21</sup> The Army Corps should develop and make public criteria for making a determination of this "impact threshold."

- Impacts to navigation and public access will be exacerbated by low water as lake volume decreases and the shoreline shrinks;
- Diking will further impede navigation and access from one part of the bay to the other – access which is already significantly impaired by existing diking and conversion of a relatively intact ecosystem into evaporation ponds;
- Transforming the west side of the lake into a more significant industrial zone will further result in a loss of quiet, solitude, scenic beauty and unparalleled remoteness. Similar impacts will be felt on the less remote, but more heavily used Bear River Bay and Willard Spur area of the lake; and
- The proposed project will modify the natural setting and sounds of Great Salt Lake, making it an industrialized site. Thus, the impact of the proposed expansion on the aquatic beauty and aesthetics of Great Salt Lake is extensive. Cumulatively, this impact is even more significant, as a significant portion of the lake is currently developed.

#### *Section 230.10(d)*

Pursuant to section 230.10(d), the Army Corps may not permit the discharge of dredged or fill material “unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.” 40 C.F.R. § 230.10(d). Given the magnitude of the proposed project and its significant adverse impact on special aquatic sites and ecosystem values, the adverse effects of the proposal cannot be minimized. This is particularly true given that the function and value of special aquatic sites, including mud flats and playas, cannot be created or replaced elsewhere.

In making any determination under this section, the Army Corps must consider:

- all cumulative impacts, including impacts from current Great Salt Lake Minerals operations, other current and proposed mineral salts extraction operations on the lake, and any other existing and reasonably foreseeable projects and development, including oil and gas development, that have adversely impacted or will adversely impact special aquatic sites, as well as other waters of the United States;
- the cumulative loss of special aquatic sites and other ecosystem values, as well as recreation and aesthetics, due to the dredging and filling of the waters of Great Salt Lake; and
- the degree to which mitigation and other efforts have been unable to recreate or replace the environmental characteristics and values lost as a result of the dredging and filling of the waters of Great Salt Lake and the degree to which these efforts have not been completed, monitored or analyzed sufficiently to determine their success.

Likely cumulative impacts include:

- Of particular concern are the cumulative impacts of the proposed expansion on all aquatic ecosystem values as well as navigation, aquatic beauty, and public recreation. Factors such as increased storm water run off, increased recreation,

and increased near-lake development all also have cumulative adverse impacts on these resources; and,

- There are currently ten producing mineral leases totaling 171,644 acres operating within Great Salt Lake. Like the Great Salt Lake Minerals expansion proposal, these operations involve diking and conversion of a functioning ecosystem into industrial solar evaporation ponds and similar facilities. In addition, areas of the bed of Great Salt Lake are currently leased for oil and gas development and there exists a keen interest in the leasing of tens of thousands of additional acres for oil and gas development. These activities will certainly have adverse cumulative adverse effects on aquatic ecosystem values, as well as the public interest.

## **B. Section 230.11 – Factual Determinations**

As part of its analysis of the GSL Minerals Proposal, the Army Corps must make factual findings that quantify and qualify the short and long-term effects of the planned project on “the physical, chemical, and biological components of the aquatic environment.” 40 C.F.R. § 230.11. These written findings must include a determination of the individual and cumulative effects of the project on: the substrate at the proposed disposal site, 40 C.F.R. § 230.11(a); current patterns, water fluctuation, circulation, chemistry, salinity, clarity, color, odor, dissolved gas levels, temperature, nutrients, and eutrophication, and obstruction of flow, alterations of bottom currents and other significant changes to the hydrologic regime, 40 C.F.R. § 230.11(b); the kinds and concentrations of suspended particulates, turbidity, the grain size and material proposed for discharge, as well as the effects of current patterns, water circulation and fluctuations, wind and wave action and other physical factors on the movement of suspended particles, 40 C.F.R. § 230.11(c); the degree to which contaminants are introduced, relocated, or increased, 40 C.F.R. § 230.11(d); and, the structure and function of the aquatic ecosystem and aquatic organisms, including as related to changes in substrate characteristics and elevation, water or substrate chemistry, nutrients, currents, circulation, fluctuation, and salinity. 40 C.F.R. § 230.11(e).

In addition, findings must be made to determine the cumulative effects of past, present and future discharges of dredged or fill material. As the relevant regulations confirm, “the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems.” 40 C.F.R. § 230.11(g)(1). To carry out the requirements of 40 C.F.R. § 230.11(g)(1), the Army Corps must predict cumulative effects to the extent reasonable and practical and collect and solicit information from other sources. 40 C.F.R. § 230.11(g)(2).

Sources from which the Army Corps should collect and solicit information, include:

- DWR and FWS, including all DWR and FWS Great Salt Lake bird survey data, bird count data from the Bear River Migratory Bird Refuge, as well as seminal works dealing with bird population data and habitat data (e.g. Wm. H. Behle, *The Birdlife of the Great Salt Lake*, U of U Press, 1958, and research of Dr. Joseph R. Jehl, Jr);

- The Utah State Engineer and databases concerning water rights appropriations;
- EPA's STORET site and other water quality data;
- Corps RAMS database and paper files to determine within the Great Salt Lake watershed: 1) number of 404 permits authorized; 2) type and acreage of waters impacted; and, 3) mitigated acres/type of wetlands, and success;<sup>22</sup>
- All applicable regional and local land use plans, or a SAMP, if available;
- All USGS maps and studies related to Great Salt Lake;
- All National Wetland Inventory Maps and the USGS National Land Cover Data Set (NLCD).
- 2004 Legacy Parkway Wildlife Impact Analysis Technical Memorandum and supporting materials;
- Literature and studies concerning the impacts of dikes on nesting bird habitats and nesting success on dikes;
- Literature and studies concerning the effects of roads and dikes as travel corridors for mesopredators on nesting birds, including those studies conducted on Great Salt Lake and the Bear River Migratory Bird Refuge specifically;
- Population models and analyses from the lake wide snowy plover survey (Cavitt, et al.); and,
- Ducks Unlimited vegetation mapping data on specific managed areas on Great Salt Lake and analysis of direct, indirect and cumulative effects to Bear River Refuge, Willard Spur and Willard Bay. This data show, among other things, that the greatest concentrations of sego pond weed in the United States is in Bear River Bay.

Finally, the Army Corps must determine the secondary effect on the aquatic ecosystem that will result from the GSL Minerals Proposal. 40 C.F.R. § 230.11(h). We note that with a project of this magnitude and scope – both temporal and physical – it is difficult to distinguish between primary and secondary effects. Therefore, we refer the Army Corps to the issues and effects listed throughout these comments. All must be examined, equally thoroughly and precisely, whether they are primary, secondary, individual, cumulative, direct or indirect.

### **C. Subpart C – Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem.**

Subpart C describes the effects that the Army Corps must consider in making the factual determinations and findings of compliance or non-compliance in subpart B. In addition,

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<sup>22</sup> In assessing the planned project, the Army Corps must include a description of historical permitting activity. The RAMS database is a critical source of this information. This database should list acreage impacted under each permit and what type of waters were impacted. The database may further state what acreage of impact was mitigated. However, to determine if mitigation was completed or successful, it is likely that Army Corps must examine its paper files. It is crucial to a proper examination of the cumulative impacts of the GSL Minerals Proposal that that Army Corps determine the success and completion rate of past mitigation efforts relative to 404 permits.



the subpart describes the values and environmental characteristics that may be lost as a result of the planned project.

#### ***Section 230.20 – Substrate***

As section 230.20 recognizes, the discharge of dredged or fill material can result in detrimental changes to the “complex physical, chemical, and biological characteristics of the substrate” – the organic and inorganic solid materials that underlies open waters and constitutes the surface of wetlands, including water and other liquids or gases that fill the spaces between solid particles. 40 C.F.R. § 230.20(a). The Army Corps must analyze the extent to which the planned project will impact the substrate of Great Salt Lake, its wetlands and mudflats and the degree to which changes in substrate will result in the loss of environmental characteristics and values described in 40 C.F.R. § 230.20(b).

#### ***Section 230.21 – Suspended Particles/Turbidity***

“Suspended particulates in the aquatic ecosystem consist of fine-grained mineral particles . . . and organic particles.” 40 C.F.R. § 230.21. The discharge of dredged or fill material can result in elevated levels of suspended particulates, at the expense of ecosystem health. 40 C.F.R. § 230.21(b). Therefore, in access the Great Salt Lake Minerals Proposal, the Army Corps must evaluate the “extent and persistence” of any resulting individual and cumulative adverse impacts to the physical and chemical characteristics of the aquatic ecosystem – including the increase in suspended particulates that:

- will exist in the evaporation ponds;
- results from the introduction of fill material;
- is caused by flushing of ponds;
- is of a consequence of pumping;
- stems from obstruction of flows; and,
- otherwise is caused by the planned project.

#### ***Section 230.22 – Water***

Plainly, the relevant regulations recognize the significance of water quality to ecosystem health and the extent to which the introduction of dredge and fill material can negatively impact water quality. Section 230.33 states: “Water forms part of a dynamic aquatic life-supporting system. Water clarity, nutrients and chemical content, physical and biological content, dissolved gas levels, pH, and temperature contribute to its life-sustaining capabilities.” 40 C.F.R. § 230.22. Each of these factors will likely be adversely affected by the planned project, including negative effects on “clarity, color, and odor,” as well as a reduction in or elimination of the “suitability” of Great Salt Lake waters for aquatic organisms, recreation and aesthetics. These comments address many of the potential impacts to water that will result from the Great Salt Lake Minerals Proposal – both cumulatively and individually. In addition to those listed through out these comments, the Army Corps must address those applicable to the present proposal as identified in 40 C.F.R. § 230.22.

#### ***Section 230.23 – Current Patterns and Water Circulation***

Section 230.23 acknowledges the obvious – that the discharge of dredge or fill material can change current patterns and water circulations by obstructing flow, changing the direction or velocity of water flow and circulation and changing the dimensions of a water body. 40 C.F.R. § 230.23(b). The result can be adverse impacts on: “Location, structure, and dynamics of aquatic communities; shoreline and substrate erosion and deposition rates; the deposition of suspended particulates; the rate and extent of mixing of dissolved and suspended components of the water body; and water stratification.” *Id.* Given that the GSL Minerals Proposal is designed to thwart completely water circulation and current patterns over 33,000 acres, the adverse impacts described in this section are certain to occur on a widespread level and must be considered fully, both individually and cumulatively.

#### *Section 230.24 – Normal Water Fluctuations*

Likewise, the GSL Minerals Proposal is designed to thwart completely normal water fluctuations over 33,000 acres. As a result, seasonal and annual fluctuations in water levels will not occur within the evaporations ponds. Moreover, seasonal and annual fluctuations of water level outside the ponds will be adversely affected by water withdrawals and physical impediments, as well as other factors. As a result, the proposed project will “change salinity patterns, alter erosion or sedimentation rates, aggravated water temperature extremes, and upset the nutrient and dissolved oxygen balance of the aquatic ecosystem.” 40 C.F.R. § 230.24(b). All these modifications, which have been identified in the relevant regulations as having adverse impacts on protected values, must be considered fully, both individually and cumulatively.

#### *Section 230.25 – Salinity Gradients*

Although section 230.25 speaks of salinity gradients where salt water from the ocean meets and mixes with fresh water, the section plainly applies to the mixing of fresh and saline water in Great Salt Lake as well as the mixing of the saline waters from different parts of the lake with distinct salinities. Importantly, this section acknowledges that restrictions in flows that will result from diking may change salinity gradients. This, in turn could result in a host of adverse impacts, including impacts on aquatic organisms that are harmed by these changes. 40 C.F.R. § 230.25.

#### *Likely Impacts to Physical and Chemical Characteristics*

The Army Corps must evaluate and determine the effects of the GSL Minerals Proposal on the values and environmental characteristics described and referenced in subpart C. In addition to the considerations above, the agency must consider the following:

- The Great Salt Lake Minerals Proposal is intended to turn more than 30,000 surface acres of relatively intact ecosystem into essentially sterile evaporation ponds. This change will be permanent for the foreseeable future and impacts from the ponds evaporation ponds may endure forever. Moreover, as these ponds will concentrate salts for three years, the waters in the ponds will change over time,

becoming more and more inhospitable to wildlife. Thus, full consideration must be made of this wholesale transformation of a significant part of Great Salt Lake on a permanent basis as well as over the course of the three year cycle of concentrating salts in the various evaporation ponds.

- The proposed project will interfere with the natural ebb and flow of the lake, as well as the mixing of the lake's waters. The proposed development in Clyman Bay would enclose 25,000 acres of water, as well as dike off about seven miles of shoreline on the western side of Gunnison Bay. The effects of this expanded development on water quality, together with the effects of current development, are certainly significant.
- Mineral salts extraction changes the chemistry of the waters of Great Salt Lake, at the very least, on a local level. These changes – including the effects of increased concentrations of some minerals and decreased concentrations of others – and the impacts these changes may have on the biota of the lake have never been analyzed. Changes to water chemistry, both due to current mineral extraction and due to the impacts of increased extraction should be addressed, particularly as these changes impact algae, brine shrimp and water birds. In addition, more salts are extracted from the lake every year than are added by river inflows; therefore, the long-term extraction of minerals – which is likely to change the chemistry and ultimately the characters of the lake – should be evaluated.
- Diking and the operation of solar evaporation ponds will increase evaporation from the lake with unknown impacts to water availability, water quality, wildlife habitat, wetlands and mud flats.
- The expansion proposal will greatly increase the ongoing shift of minerals between Gunnison Bay and Bear River Bay, and also possibly Gilbert Bay. A full understanding of these possible shifts in minerals and their impacts to the various bays should be developed, including whether the movement of water and minerals could concentrate mercury or selenium in the receiving waters or in the waters from which the minerals and water are being removed. These effects should be quantified and analyzed.
- Drought and low water will further exacerbate the water quality impacts of current and proposed operations. In addition, as the population of the Wasatch Front increases, there will be more demand for fresh water, likely resulting in less water reaching Great Salt Lake.
- The Army Corps should consider the impacts of global climate change in its evaluation of this project. In addition to ordinary drought events, long-term climate change is expected to result in smaller snowpacks in the Wasatch Mountains and reduce flows of fresh water to the lake, potentially lowering water levels even below the historic minimum.
- Construction of the dikes will disturb lake bed sediments and stir up contaminants. In addition, the use of motors, motorized vehicles and other equipment as a result of the development could adversely impact water quality.
- Pumps, underwater canals, water intake points and discharge points all impact water quality, individually and cumulatively. Flushing of solar ponds impacts water quality by forcing into specific parts of the lake waters containing a high concentration of unspecified minerals.

- Removal of extremely high volumes of water from the open waters of the lake and sequestering them in largely sterile evaporation ponds affects water quality and quantity available to the Great Salt Lake ecosystem. Moreover, increased evaporation of waters from the lake, caused by an increase in water surface area resulting from the flooding of the ponds, will also impact these values. This loss of water could lower lake levels thereby further concentrating pollutants, further restricting natural water flows as well as public access.
- The proposed expansion would result in the diking and conversion of a total 30,000 acres of Bear River Bay into essentially sterile evaporation ponds. Diking and conversion impacts water quality because it will interfere with the natural ebb and flow of the lake, as well as the mixing of the lake's waters. Indeed, the 8,000 acre expansion proposal appears to essentially cut off water flows and access to and from Bear River Bay, particularly when water levels are low, as they currently are. Similarly, flows between Bear River Bay and Willard Spur, which are critical to ecosystem function, will also be disrupted. In addition, as the Division of Wildlife Resources made plain, this area is important at low water levels because it creates a natural lake within the bay. IMC Kalium/DWR Memo, August 28, 1998 at 3. The effects of this expanded development on water quality, together with the effects of current development, will be significant. Specifically, circulation of fresh water, so critical to the Great Salt Lake ecosystem, will be impeded, especially during low water years. Since the open water of Willard Spur is an extremely valuable area for water birds the potential adverse impacts are certain and must be fully explored, based on flow patterns during low as well as high water years.

#### **D. Subpart D – Potential Impacts on Biological Characteristics of the Aquatic Ecosystem**

Subpart D describes the effects that the Army Corps must consider in making the factual determinations and the findings of compliance or non-compliance in subpart D. In addition, the subpart describes the values and environmental characteristics that may be lost as a result of the planned project.

##### ***Section 230.30 – Threatened and Endangered Species***

In keeping with federal law, the Army Corps must consider the impact of the GSL Minerals Proposal on listed species. 40 C.F.R. § 230.30. Although the agency currently states that there are no such species that may be affected, we suggest that peregrine falcon have used and may continue to use the north end of Bear River Bay. Moreover, we reserve the opportunity to make additional comments should other listed species be identified.

##### ***Section 230.31 – Aquatic Organisms in the Food Web***

Not surprisingly, the relevant regulations determine that the discharge of dredge or fill material into a water of the United States can adversely affect populations of fish, insects, and other organisms in the food web in all their life stages. 40 C.F.R. § 230.31. Resulting

contaminants and water quality changes can kill or debilitate these desirable organisms or favor undesirable organisms. *Id.* Similarly, desirable organisms can be smothered. *Id.* These comments address many of the potential impacts to aquatic organism that will result from the Great Salt Lake Minerals Proposal – both cumulatively and individually. In addition to those listed through out these comments, the Army Corps must address those applicable to the present proposal as identified in 40 C.F.R. § 230.31.

### ***Section 230.32 – Other Wildlife***

Because Great Salt Lake is of utmost importance to birds, many of these comments are devoted to describing the adverse impacts on birds, their habitat and the water that serves as the basis for that habitat. The importance of these considerations is underscored by section 230.32, which recognizes the severe impacts to wildlife, including birds, that are likely to result from the discharge of dredge or fill material into a water such as Great Salt Lake. Given the enormity of the proposed project, the Army Corps is duty bound to carefully examine all individual and cumulative impacts of the planned project on wildlife as identified in section 230.32 as well as in these comments and by all relevant state and federal agencies.

### ***Likely Impacts to Biological Characteristics of the Aquatic Ecosystem***

The Army Corps must evaluate and determine the effects of the GSL Minerals Proposal on the values and environmental characteristics described and referenced in subpart D. In addition to the considerations above, the agency must consider the following:

- As noted above, the Great Salt Lake Minerals Proposal is intended to turn more than 30,000 surface acres of relatively intact ecosystem into essentially sterile evaporation ponds. This change will have permanent impacts to the lake. Diked areas will be cutoff from most, if not all, natural processes that affect the rest of the lake. Moreover, as these ponds will concentrate salts for three years, the waters in the ponds will change over time, becoming more and more inhospitable to wildlife. Thus, full consideration must be made of this wholesale transformation of a significant part the Great Salt Lake ecosystem on a permanent basis as well as over the course of the three year cycle of concentrating salts in the various evaporation ponds.
- The discharge of dredged or fill material will further concentrate human usage in non-developed areas, thereby impacting wildlife habitat in these areas.
- Gunnison Island, located close to the 25,000 acre expansion proposal, hosts one of the largest breeding colonies for American white pelicans in North America. Gunnison Island is now the only nesting location for American White Pelicans in Utah. Currently, Great Salt Lake Mineral dikes come within approximately four and one half miles of Gunnison Island. The expansion proposal would place dikes as close as within two and one half miles of the island.
  - Dike construction and maintenance will bring an added anthropogenic influence to the Bay including a dike additional miles closer to the island. These dikes will provide a road access for terrestrial predators to come closer to the island and a travel way to a land bridge to Gunnison during

low lake periods. It is necessary to understand what steps are required to ensure that the American white pelicans will continue to nest at Gunnison Island – yet no analysis has been undertaken. For example, particularly at lower lake levels, predators could take advantage of this diking to access breeding sites such as Gunnison Island.

- Dikes would also increase potential human disturbances such as noise, lighting, and land vibrations. In 1963 during a low lake event, you could wade to the island from the west side according to DWR reports of human disturbance before the island was protected. During this human intrusion into the colony, many young pelicans were killed.
- With the close proximity to Gunnison Island, a concentration pond dike may become a roost site for flightless fledgling pelicans exposing them to land predators. A dike also makes trespass easier for casual or intentional human trespass.
- A buffer around Gunnison Island designed to protect this area from boats and airplanes and is not sufficient to safeguard the birds from disturbances brought on by permanent structures.
- The proposed expansion has the potential to impact adversely other bird life. There has been no analysis of the impact of development on the eared grebe and other birds that depend upon the north arm during periods of flood, estimated by the Division to be approximately 10% of the time. In high precipitation years, as fresh water decreases salinity in the north and south arms, brine shrimp production in the north arm will exceed that in the south arm, and birds such as the eared grebe, Wilson's phalaropes and red-necked phalaropes will necessarily rely on the ecosystem of the north arm. The same may also be true for waterfowl. By the same token, diking and conversion to evaporation ponds will be in place for several decades. Within that time frame, the causeway could be breached or actions taken to better circulate the lake's waters. Again, the north arm could become even more important to birds such as the eared grebe.
- As the proposed 25,000 acre expansion would also dike off about seven miles of shoreline on the western side of Gunnison Bay, it may adversely impact birds such as the snowy plover. The potential impacts to bird life and other flora and fauna in this area should be fully explored.
- As noted above, DWR stated in connection with the area designated for the 8,000 expansion proposal in Bear River Bay:

the undiked areas of Bear River Bay have tremendous value to wildlife, specifically birds. Some of the values include: molting/brood rearing areas for Canada geese and ducks; a foraging area for fish eating birds such as pelicans, cormorants, western grebes, [and] great blues herons; [and an eared] grebe nesting colony.

Memo from IMC Kalium Ogden Corp., Division of Wildlife Resources, Division of Forestry, Fire and State Lands to John Kimball, Director Division of Wildlife Resources and Arthur DuFault, Director Division of Forestry, Fire and State Lands, August 28, 1998 at page 2, Exhibit 8, attached. With regard to some of the particular parcels slated for diking and conversion, the agency stated:

DWR also identified lands of important wildlife value in Sections 16, 17 and 18, Township 7 North, Range 4 West. These lands were not included in the lease exchange but are valued by DWR for periods when lake level falls below 4200' in Bear River Bay.<sup>23</sup> DWR is particularly interested in lands which are north and northwest of the existing dikes of IMC Kalium because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural "lake" within the bay.

These statements show that the proposed expansion will interfere with and significantly impair the public trust.

- Other statements echo that Bear River Bay is of critical importance to waterbirds. As the Utah Department of Natural Resources has confirmed:

Bear River Bay is the freshest region and receives the largest volume of riverine inflow. Its near-surface salinity is similar to that of the Bear River. This system is bounded on the north and east by state, federal, and private wetlands; on the south by industry; and to the west by the Promontory Mountains. This bay is fresh enough to support a community of submergent hydrophytes including sago pondweed (*Potamogeton pectinatus*) and widgeon grass (*Ruppia maritima*). There are significant islands of emergent wetlands here, especially in the east part of the bay in the Willard Spur. . . . An ecological element of vital importance to piscivorous birds in this area is the fishery that persists when the lake elevation is higher than 4,200 feet (1,280.2 m) above sea level. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake. Although the smallest region on the lake, it makes an exceptional contribution to the lake's avian population.<sup>24</sup>

Because of the importance of this water body to wildlife habitat, particularly close examination of the impacts of the current and proposed expansion on ecosystem values must be undertaken.

- The Great Salt Lake Waterbird Survey, conducted from 1997 to 2001, confirms the conclusions reached by the Division of Wildlife Resources and Department of Natural Resources. This survey was undertaken in 12 different areas of the total Bear River Bay complex, including the Bear River Refuge, Public Shooting

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<sup>23</sup> As of April 24, 2007, the level stood at 4197 feet. The level has been below 4198 feet for at least the last three years.

<sup>24</sup> *Avian Ecology of Great Salt Lake*, by Tom Aldrich and Don Paul from Great Salt Lake: An Overview of Change, edited by J. Wallace Gwynn, Ph.D., Special Publication of the Utah Department of Natural Resources, 2002.

Grounds, and Bear River Club. The surveys occurred numerous times from early spring through fall during these five years. The survey underscores the importance of Bear River Bay to waterbirds. A map of these survey areas is attached, along with some of the bird counts data.

- As noted above, Bear River Bay is of critical importance to Canada geese, huge numbers of which use the area while molting. The Utah Division of Wildlife Resources has conducted aerial surveys of Canada Geese in June in the open water of Bear River Bay since 1972. The highest count was 11,893 in 1998. The impacts to these molting geese due to an expansion of the mineral ponds in Bear River Bay are not known. What is of concern is the reduction in habitat and also the potential decrease in available wet areas, particularly in lower water years. This reduction in habitat could result from direct loss to diked areas, as well as water quality impacts due to increased evaporation and reduced circulation. In addition, the Army Corps must consult and develop bird survey data regarding other breeding waterfowl, such as redhead and teal, that heavily use this area.
- The discharge of dredged or fill material in Bear River Bay will likely adversely impact the fisheries in Willard Spur and the bay. This is because the planned project is likely to disrupt flow between the bay and the spur and may adversely impact water chemistry and water quality.
- The discharge of dredged or fill material will likely adversely impact wildlife and habitat due to noise and increased access of predators and humans across dikes. Moreover, the use of these dikes by trucks and other equipment and the use of pumps, engines and other equipment generally will adversely impact wildlife by directly killing animals, by fragmenting habitat, by introducing noise and other disruptive conditions.
- Any impact to wildlife habitat caused by the discharge and the conversion of relatively intact ecosystem into evaporation ponds is likely to be exacerbated by low water.
- Adverse impacts to water quality and decreases in water quantity will adversely affect wildlife and wildlife habitat.

#### **E. Subpart E**

We note that in addition to wetlands, subpart E identifies mudflats as "Special Aquatic Sites." 40 C.F.R. § 230.41 (wetlands); 40 C.F.R. § 230.42 (mudflats). This further emphasizes the importance of both site types to protecting the waters of the United States, like Great Salt Lake. These regulations also underscore how vulnerable wetlands and mudflats are to discharges of dredge and fill material. These comments address many of the potential impacts to special aquatic sites that will result from the Great Salt Lake Minerals Proposal – both cumulatively and individually. In addition to those listed through out these comments, the Army Corps must address those applicable to the present proposal as identified in 40 C.F.R. § 230.31.

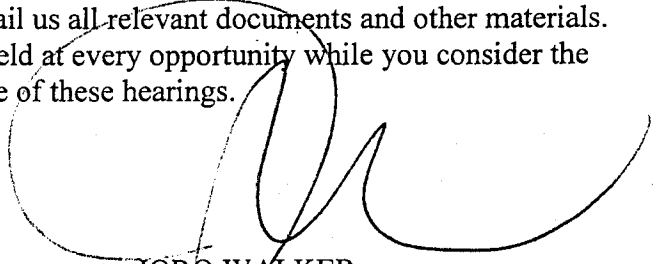
#### **F. Conclusion**

Thank you for your full consideration of the critical points we raise in these comments. Please do not hesitate to contact me with any questions or concerns regarding the issues



we raise herein. Moreover, if you have any difficulty gaining access to any of the materials we cite, please let me know and I will provide them for you. Also, we will send you, via U.S. Mail, a hard copy of these comments with all attachments.

Thank you for all you do to protect the waters of the United States and the aquatic communities, recreation and aesthetic values that depend upon them. Please keep us informed as to any further opportunity for public participation relative to the GSL Minerals Proposal and please send or email us all relevant documents and other materials. We also request that public hearings be held at every opportunity while you consider the planned project and that we receive notice of these hearings.

A large, stylized handwritten signature in black ink, appearing to read 'J. Walker', is written over the typed name and title.

JORO WALKER  
Director, Utah Office  
Attorney for FRIENDS, et al.



## WESTERN RESOURCE ADVOCATES

Protecting the Interior West's Land, Air, and Water

April 16, 2008

Jason Gipson, Project Manager  
US Army Corps of Engineers, Sacramento District  
Bountiful Office  
533 West 2600 South, Suite 150  
Bountiful, Utah 84010

Dear Mr. Gipson,

These scoping comments are submitted on behalf of FRIENDS of Great Salt Lake, Great Salt Lake Audubon Society, National Audubon Society, League of Women Voters of Salt Lake, League of Women Voters of Utah, Red Cliffs Audubon Society, Bridgerland Audubon Society, Wasatch Audubon Society, the Utah Chapter of the Sierra Club, Utah Rivers Council, and Utah Waterfowl Association, (collectively "FRIENDS"), and relate to the solicitation of comments for Public Notice SPK-2008-00268, permit application of Great Salt Lake Minerals Corporation's Water Delivery Canal Project. We appreciate the opportunity to comment on this project and would ask that we be kept on all mailing lists as this project moves through the 404 and/or NEPA processes.

We understand that the applicant is proposing to relocate and lengthen the southern portion of the existing inlet canal that transports water to the solar evaporation pond in Clyman Bay. In addition, the applicant proposes to deepen the canal so that there is continued water flow as lake levels decrease. A portion of the canal will need to be moved approximately 200 feet to the north. The canal would be relocated by dredging the project area with backhoes creating a berm that would occupy 14.7 acres, and would disturb an approximate area of 7.3 acres.

**Since these are "Connected Actions", the Corps should Incorporate the Analyses of this Project with the Proposed Expansion of Solar Evaporation Ponds on the Great Salt Lake into one Environmental Impact Statement**

The scoping notice references the EIS process that has begun for the construction of 33,000 acres of various evaporation ponds<sup>1</sup> in the same vicinity as the currently proposed project. Based on this scoping notice its clear that these two projects are intertwined to the extent that they should not be separated in terms of analysis. The scoping notice states that the existing inlet canal would be within the footprint of one of the newly proposed evaporation ponds. If the canal is

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<sup>1</sup> Public Notice SPK-2007-00121 – Proposed 33,000-acre Expansion of Solar Ponds on the Great Salt Lake (Great Salt Lake Minerals)

Colorado Office • 2260 BASELINE ROAD, SUITE 200 • BOULDER, CO 80302 • 303-444-1188 • FAX: 303-786-8054 • E-MAIL: INFO@WESTERNRESOURCES.ORG  
Utah Office • 425 EAST 100 SOUTH • SALT LAKE CITY, UT 84111 • 801-487-9911 • FAX: 801-486-4233 • E-MAIL: UTAH@WESTERNRESOURCES.ORG  
Nevada Office • 769 BASQUE WAY, SUITE 300 • CARSON CITY, NV 89706 • 775-841-2400 • FAX: 866-223-8365

relocated, the cumulative impacts from the canal relocation together with the pond evaporation project, would require the two projects to be analyzed in one EIS.

Because an EIS will be prepared for the proposed evaporation ponds project it's most logical to incorporate all of the analyses for the current project into the proposed expansion of evaporative ponds EIS.<sup>2</sup>

A justification for the canal relocation appears to be the construction of one of the evaporation ponds, making these actions "connected" under NEPA. "Connected actions" are those that automatically trigger other actions which may require environmental impact statements; cannot or will not proceed unless other actions are taken previously or simultaneously; or are interdependent parts of a larger action and depend on the larger action for their justification. 40 C.F.R. § 1508.25(a)(1). NEPA requires federal agencies to evaluate the cumulative impacts "which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions." 40 C.F.R. § 1508.7. Of course, there are many past projects that have cumulatively impacted this ecosystem, and so to the extent that there is data, the Corps must integrate these past projects into its cumulative impact analysis.

If the Corps decides not to combine the analysis of the two projects a separate Environmental Impact Statement (EIS) should be prepared for the current project under NEPA.

### **The Corps Must Analyze Impacts to Wildlife**

Another key issue referenced in the scoping letter is how the proposed project might impact wildlife. The scoping letter concedes that wildlife have not been studied in this area, since there is an apparent lack of data on the subject. NEPA requires analysis of the direct and indirect effects of proposed actions as well as discussion of the significance of those actions. 40 C.F.R. §1502.16(a). In addition, agencies must ensure the scientific integrity of the decisions they make, and take a "hard look" at the environmental consequences of proposed actions.<sup>3</sup> The Corps must collect high quality scientific data on what the impacts to wildlife will be as a result of the proposed actions in order to fulfill their responsibilities under NEPA. The importance of the Great Salt Lake Ecosystem

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2 "Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement". 40 C.F.R. 1504.2(a). Projects in the same geographical area are commonly analyzed in the same EIS such as the same body of water or general area. 40 C.F.R. §1504.2(c)(1).

3 40 C.F.R. §1502.24 ("Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix").

to wildlife cannot be understated, and how these projects will cumulatively affect area wildlife must be analyzed in detail.<sup>4</sup>

A key point of analysis relating to wildlife is how continued dewatering of the lake, caused either the proposed projects and/or global climate change will impact wildlife. For instance, at roughly 4,195 or a bit lower, the mudflat to Gunnison Island would be dry or mostly dry, allowing much easier access for humans and predators. Gunnison Island is the only nesting ground for American White pelicans in Utah, and how continued lake lowering will impact this species is only one question that will need to be addressed in the Corp's analysis. Colonial breeding species, such as pelicans are highly sensitive to disturbance.

Lowered lake levels will also shrink the shoreline creating potential feeding problems for shorebirds/waterbirds. Less water could further concentrate toxins that become trapped in the lake. These toxins do not flush downstream since Great Salt Lake does not have an outlet. How this water quality problem will continue to impact area avian species will need to be analyzed. In addition, increased levels of toxins, and water quality generally, will need to be examined in terms of compliance with section 401 of the Clean Water Act. Impacts to brine shrimp and brine flies, the primary migratory bird food sources, should be analyzed as well.

The scoping notice references the observation of snowy plovers in the area. It is unknown how many other species may occupy the area, and so a more formalized bird survey should be conducted to determine what species are present. Such a survey should account for birds at different GSL elevations and subsequent salinities that drive bird food abundance e.g., brine shrimp. At a minimum, this type of information should be gathered to help determine what effects will occur to both migrant and breeding species.

We are glad to hear that the Corps will consider a range of alternatives since the alternative analysis is integral in the NEPA process. The regulations implementing NEPA refer to the comparison of alternatives as the "heart of the environmental impact statement." 40 C.F.R. § 1502.14. Agencies are directed to "rigorously explore and objectively evaluate all reasonable alternatives," then "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits,"

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4 Avian species in particular are especially dependent on the ecosystem. Overall, 257 avian species use the Great Salt Lake Ecosystem. Of these, 112 species are exclusively associated with the lake's varied wetland areas, while 117 species reportedly nest on the lake's periphery or on its islands. At least 33 species of shorebirds representing 2 to 5 million individuals use Great Salt Lake annually, stopping along routes that take them elsewhere in North, Central or South America. In addition, up to 5 million waterfowl migrate through the lake each year. Approximately 30 percent of the waterfowl migrating along the Pacific Flyway depend upon the Great Salt Lake wetlands.

and explain why other alternatives were eliminated from detailed consideration.  
Id.

As explained above, we recommend that the Corps analyze this project together with the proposed evaporation pond expansion project. Analysis of these two closely related projects will also make most sense in terms of developing a wide range of alternatives. The scoping notice states that if the 18,000-acre pond were authorized, the existing inlet canal would be located within the footprint of the proposed pond, requiring a new inlet canal to be constructed. The two projects are dependent upon each other, at least in part, and so analyzed together, the Corps should be able to come up with a reasonable range of alternatives that would accomplish the purpose and need of the projects.

We especially encourage the Corps to analyze alternatives that are less water dependent, and those that are least environmentally damaging. Section 230.10(a) allows permit issuance for only the least environmentally damaging practicable alternative. Also, the current description of the project appears to be written unreasonably narrow, and in a way that confines the range of alternatives. We recommend that the Corps reword the purpose and need so that it may be broadened to encompass a wider range of alternatives.

The scoping notice for this project states that mitigation has not yet been proposed. Another reason we believe that the analysis for this project should be combined with the proposed evaporation pond expansion is that this would enable the applicant to first, comprehensively avoid all impacts to the extent possible, secondly, to minimize environmental damage, and lastly mitigate the cumulative effects of the projects. Section 230.10(d) states that appropriate and practicable steps to minimize the adverse impacts will be required through project modifications and permit conditions. The duty to mitigate is required when avoidance and minimization, alone do not suffice in terms of accomplishing the goals of the 404 program.

Mitigation within the Greater Salt Lake Ecosystem has had limited success, therefore any proposal to mitigate impacts from these projects should analyze the history and success of past mitigation efforts. If the Corps concludes that compensatory mitigation is necessary (based on the inability to avoid certain impacts) in-kind mitigation should be utilized.

**Because Lake Levels will Likely Drop to its lowest Recorded Level this Issue must be Carefully Analyzed**

There is great concern about how this project would have the unprecedented effect of lowering lake levels. The lake level would be dropped to 4,188 feet, which is approximately three feet lower than the lowest level recorded since 1851. Thus, enormous amounts of water could be funneled out of a lake already stressed by low water levels. Because the integrity of wildlife habitat, recreation

opportunities, and industry depends on lake levels, it is critical to accurately identify, analyze and disclose potential changes in lake levels to the public.

The following provides a sense of how often since 1851 the lake has been at levels approximating 4,188 feet. The 1995 Great Salt Lake Comprehensive Management Plan: *Planning Process and Matrix*, Sept. 1995 (Page 26) proposed Great Salt Lake Planning Zones. Zone 1 is defined as being from 4,188 feet to 4,192 feet. The probability percentage that water would be at this level is 1.4%. Zone 2 is defined as being from 4,192 feet to 4,196 feet the probability percentage that the water would be between these elevations is 7.6%.<sup>5</sup> In other words the probability that the lake would be below 4,192 feet was determined to be only 1.4% and below 4,196 feet the probability is 9.0%

Great Salt Lake Minerals Corporation appears is planning ahead for its continued operation. Governor Huntsman's Blue Ribbon Advisory Panel on Climate Change "found the state is warming faster than the global average, and that without concerted effort, extreme droughts and heat waves are virtually assured."<sup>6</sup>

Impacts of a continued low level of Great Salt Lake have not been fully explored. Numerous questions need to be addressed before a final decision is made on this application. What are the impacts of a continued lower level to Great Salt Lake? Are there ways to maintain an adequate level of water in Great Salt Lake? What is an adequate level? We submit that these questions regarding a navigable body of water, and a public trust need to be fully explored before a private mineral company is allowed to "to ensure water can be conveyed to the evaporation ponds during low lake levels."

The following are a few thoughts about the potential impact of continued water elevations below about 4,195' asl on Great Salt Lake:

- Navigation between the Great Salt Lake Marina and Antelope Island could become extremely difficult. The plan developed for the Great Salt Lake Marina states that dredging would be necessary to maintain a seven foot draft (4195') for watercraft. Airboat access to Great Salt Lake would also be affected.
- Impacts to wildlife must be analyzed. Increased impacts to wildlife can be expected as a result of lowered lake levels. Impacts to the only population of American White Pelicans in Utah from lowered lake levels are likely to occur.
- Reduced shoreline for shorebirds and other waterbirds. Reduction in available shoreline would reduce the areas shorebirds, waterfowl and

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5 GSL Draft Comprehensive Management Plan, Nov. 3, 1999.

6 Source: "Utah: Epicenter for rising temps," Salt Lake Tribune, March 28, 2008, Page B-5.

waterbirds could use for shoreline feeding. This compaction and increased crowding could have the potential to increase avian diseases like cholera and botulism.

- Concentration of contaminants. Great Salt Lake is a terminal lake, which means that it serves as a sink basin for all kinds of activities. Storm water runoff and contaminants from the growing population living upstream end up in the lake. Studies conducted by USGS have identified emerging contaminants (pharmaceuticals, hormones, organic compounds, etc) in streams, rivers and sediment samples of Farmington Bay. Great Salt Lake has been found to have the highest concentrations of methylmercury in the US. Selenium inflows and potential loading in the system are also concerns.
- Dust from the exposed lakebed could have negative health impacts to humans and wildlife. The Utah Division of Air Quality conducted a 2 year study in 2005 and 2006 of wind-blown dust particles from the exposed Great Salt Lake shoreline. Six consecutive years of drought left nearly 70,000 acres of exposed shoreline. Dr. Dianne Nielson, Executive Director of UDEQ at the time stated "there is a lot of chemistry in the lake that we don't have a good handle on." In a recent article in High Country News about the Salton Sea, impacts to human and wildlife health, and agriculture were considered if the Salton Sea is allowed to dry up without treatment.<sup>7</sup>
- Bear River Bay below d-line at Bear River Migratory Bird Refuge could become drier. During the GSL waterbird surveys from 1997 through 2001, this area was one of the most species diverse and highest use areas on the lake. Freshwater inflow into Bear River Bay is critical to maintaining this unique habitat and food availability for this bird use.
- There would likely be impacts on brine shrimp, brine shrimp harvesting, and brine-shrimp dependent birds.
- As the GSL surface elevation nears 4193 the Gilbert Bay and Gunnison Bay essentially become two separate bodies of water. A canal at 4188 'asl diverting water into an artificial pond would drain the Gunnison Bay without the effect of recharge from Gilbert Bay. This would artificially increase the desiccation of Gunnison Bay placing the breeding colonial avian species at accelerated risk of disturbance by predators and humans. This action could initiate, quicken and/ or extend exposure of Gunnison Island.

The unprecedented low lake levels could cause the impacts described above exacerbated by global climate change and/or the projects proposed by Great Salt Lake Minerals Corporation. Additionally, since global climate change is predicted to impact the west and more specifically Utah to a greater degree than the global average, the Corps should analyze what the cumulative impacts to

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7 Source: The People of the Sea: California's Salton Sea could dry up and die or be fixed and developed . . . , March 3, 2008, page 11.

wildlife, water quantity (lake levels), water quality, and other resource values are based on increased temperatures. This analysis will help predict and guide management strategies in the future based on a warmer climate.

This project coupled with the proposed expansion of solar evaporation ponds will consume significant amounts of water. For this project alone, an amount in the range of 100,000 acre feet of water could be consumed. Over the last 20 to 30 years, studies have attempted to define the effects of water development and other human-caused water use on lake level. The studies indicate that historically, for each 100,000 acre-feet of yearly depletion in the basin, the average level of the lake would be approximately one foot lower. **The effect of this depletion on the lake elevation is greatest at low lake levels.** The diversion of 100,000 acre-feet does not result in the depletion of 100,000 acre-feet if part of the diverted water returns to the lake." (Emphasis added.)<sup>8</sup>

Assuming the ponds were covered with one foot of water, these proposed ponds alone would entail the consumption of 10.7 billion gallons of water. Other projects within the Greater Great Salt Lake Ecosystem consume significant amounts of water as well, a probable contributing factor to low lake levels. Analysis of exactly how much water Great Salt Lake Minerals Corporation is consuming is an important first step to determine what can be done to mitigate the problem of declining lake levels. Other factors may be contributing to this problem, but only through quantitative analysis of these projects consumptive use of water will the cumulative impacts to the aquatic ecosystem be realized. Will the deepening of the canal allow for greater usage of water or is this project only a preventative measure for a worst-case scenario in terms of lake levels? The quantification of Great Salt Lake Minerals' water use will help guide management to address some of the problems cited above such as the dryness in the area around Gunnison Island.

### **We Recommend that a Conservation Pool be Constructed in Recognition of the Public Trust Doctrine**

We propose that a conservation pool be constructed based on all proposals that allow a private interest to lower lake levels. As a navigable watercourse, the project area is in essence a public highway. The U.S. Supreme Court held that these lands "[s]hall not be disposed of piecemeal to individuals as private property, but shall be held as a whole for the purpose of being ultimately administered and dealt with for the public benefit by the state....." Shively v. Bowlby, 152 U.S. 1 (1894). In addition, the Public Trust Doctrine provides that title to navigable waters, the lands beneath, as well as wildlife inhabiting these waters within a state is a special title. It is a title held by the State in trust for the

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8 Source: *Great Salt Lake Comprehensive Management Plan, Planning Document*. Prepared by the Great Salt Lake Planning Team, Utah Department of Natural Resources, May 1, 1999. Page 16.



benefit of the public, and establishes the right of the public to use and enjoy these trust waters.

In this case, the government purposes to allow a private company to mechanically lower lake levels through deepening of a canal for the sole benefit of a private company, and to the probable detriment to the public interest. We have seen and will continue to experience ecological harm to the Great Salt Lake Ecosystem due to lowering lake levels. The Public Trust Doctrine demands that there be some public benefit through such an act. In this case, there appears to be none. Under the circumstances, the very least that can be done to mitigate the adverse effects of such a proposal is to construct a conservation pool.

### **A Public Hearing to Consider This Application Should Be Held**

In addition, a public hearing should be held to consider this application. A hearing is warranted in this case since this project falls under the regulatory guidelines of section 10 of the Rivers and Harbors Act. Section 10 permits are required for activities such as dredging and filling within the navigable waters of the United States. The geographic jurisdiction of the Rivers and Harbors Act includes all navigable waters of the United States which are defined (33 C.F.R. Part 329) as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." Under section 10 of the Act once the application is complete the district engineer is to determine if a hearing is warranted for the application.

Public hearings are encouraged based on the Act's regulatory scheme.

"(f) Public hearings. (1) It is the policy of the Chief of Engineers to conduct his civil works activities in an atmosphere of public understanding, trust, and mutual cooperation and in a manner responsive to public needs and desires. To this end, public hearings are helpful and will be held whenever there appears to be sufficient public interest to justify such action. In case of doubt, a public hearing should be held". 33 C.F.R. 209.200(f).

Clearly, there is a high public interest in the projects at issue in this case, and as expressed in regulations implementing the Rivers and Harbors Act any doubt as to whether a hearing should be held should be resolved in favor of holding one. Other interested parties that have not received public notices for this project may also benefit from a public hearing. Given the opportunity, certain constituencies would prefer to provide oral comment as opposed to written scoping comments. Such parties should have the opportunity to provide comment through a hearing.

We additionally suggest that the Division of Forestry, Fire and State Lands be brought into this process. The Division has responsibility to manage Great Salt

Lake as a navigable body of water for the citizens of Utah. We also would like to point out that the Record of Decision in the section on Evaluation of Facts, in the first part of the *Great Salt Lake Comprehensive Management Plan and Decision Document*, prepared by the Great Salt Lake Planning Team, Utah Department of Natural Resources, March 1, 2000 states, "Any private uses of sovereign lands must yield to the criterion to avoid substantial impairment of protected public uses."

We thank you again for the opportunity to comment on this proposed project, and look forward to working with you in the near future.

Sincerely,

Joel Ban  
Attorney

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Dave Grierson, Utah Division of Forestry, Fire and State Lands  
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